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NATIONAL ESTUARINE POLLUTION STUDY. PROCEEDINGS OF THE VIRGINIA PUBLIC MEETING HELD AT FORT MONROE, VIRGINIA ON NOVEMBER 19, 1968

Federal Water Pollution Control
Administration
Charlottesville, Virginia

1974

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PROCEEDINGS

of the

VIRGINIA PUBLIC MEETING

NATIONAL ESTUARINE POLLUTION STUDY

FEDERAL WATER POLLUTION CONTROL ADMINISTRATION

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Supporting Documents Submitted by Individuals and Agencies on File in the Middle Atlantic Regional Office, But Not Included in the Record

1. "The Storm Drainage Disposal Problem in the Richmond Area," by A. H. Paessler and E. R. Sutherland.
2. "The Virginia Tidal Riverbank Erosion Survey," by Virginia Agricultural Experiment Station, Blacksburg, Virginia.
3. "Marine Resources of Virginia--The Use, Conservation, and Development," Report of the Virginia Marine Resources Study Commission to the Governor and the General Assembly of Virginia.
4. "Minutes--Public Hearings Before the Virginia Marine Resources Study Commission."

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Appendix A

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November 19, 1968

GARY GARDNER: Welcome to the meeting of the Region of the Federal Water Pollution Control Administration. I would like to pass on to you the regrets of Mr. Eugene Jenson, the Regional Director of the middle Atlantic Region, who came down with a severe cold over the week-end and was unable to be here. My name is Gary Gardner. I'm from Charlottesville, the Regional office.

I would like to give you a little background into the purpose of the meeting and why we are here this morning. The Clean Water Restoration Act of 1966, an amendment to the Federal Water Pollution Control Act, required the Department of Interior make a national study of estuarine pollution. The objectives of this study are outlined in a brochure to be found on the back table and I'll summarize these if I can. The objectives are for the Secretary of the Interior to prepare a report and submit to Congress. This report shall (1) document and analyze the various aspects of estuarine pollution; (2) make recommendations for a comprehensive national program for the preservation, use and development of estuarine zones and (3) recognize the respective rolls of Federal, State and local governments plus private and public interest. Actually the Act fairly well defines the scope of this activity. It calls for a comprehensive study of the effects of its pollution including the effects of sedimentation on the estuaries and estuarine zones and particularly related to the beneficial uses, and to consider use trends which will influence future pollution problems. The Act also calls for assembly and coordination and organization of all existing data. The identification of problems in areas in which there is a need for Federal study. An analysis of economic and social values of the estuaries and a discussion of the major economic, social and ecological trends as they may influence future pollution problems. The Act specifically directs that the study be made in cooperation with other governmental agencies, private organizations, institutions and individuals. The purpose of this meeting today is to obtain an expression from interested persons, groups and agencies from here and throughout the State of Virginia. Although we do expect some statements from state agencies and other federal agencies the primary purpose is a public show. In other words individuals from conservation organizations, League of Women Voters, and private citizens have an opportunity to make a statement here this morning or to submit a statement, the record of the minutes of this meeting will be held open for approximately fifteen days. These statements will be contained in a report to Congress so with this opportunity that you have, all of the information that we collect will be reviewed by Congress. By way of a further comment all those who have registered for this meeting and hopefully everyone here has,will receive a copy of the minutes of this meeting. Some months ago the Secretary of the Interior wrote to the Governors of each of the twenty-three coastal states here in the United States and requested that he designate someone to serve as a focal point for State interest. Governor Godwin appointed three individuals here in the State of Virginia and on my right are these three individuals. First Dr. William Hargis, who is the Director of the Virginia Institute of Marine Science. Seated next to Dr. Hargis is Mr. Paesler, who is Executive Secretary of the State Water Control Board and seated on the far right is Mr. Marvin Sutherland, Director of the Virginia Department of Conservation and Economic Development. The group of individuals seated here to my left will serve as a panel and these individuals will be introduced to you in a few more moments. There are certain ground rules we would like to attempt to follow here in our session. First, all of those presenting statements will be asked to come up here to the podium and make their presentation. There will be no questions from the floor of the speaker. The panel serves the purpose of asking questions primarily from the standpoint of clarifying some of the statements that are made by the individuals who come forward. They are not here to harass so don't let it bother you. More for clarification or to expand upon a point. I'm sure that all of us have certain ideas and sometimes it is very difficult to get these in writing. If it is a prepared statement and this off-the-cuff arrangement should help maybe explain a little more fully some of the statements. If at the time of registration you did not indicate that you desired to make a statement feel perfectly free to change your mind as we progress along if you feel that you would like to present something for the record and to the group please go back to the registration desk and indicate this and they will send a card forward and we will call upon you. As indicated earlier the records of the meeting will remain open for approximately fifteen days and if you don't care to come here to speak, feel free to send the information to the Regional Office in Charlottesville. The address is in the Estuarine Brochure. With that I will turn the session over to Mr. Paesler who will introduce the panel and begin our meeting.

PAESLER: Thank you Mr. Gardner. I would like to express the appreciation on behalf of the State representatives here today for your coming to this meeting to consider this most valuable of Virginia's assets for estuarine resources. As Mr. Gardner has indicated we have a panel of experts here who are here for the purpose of trying to make this record as complete as we can and to introduce them starting on my immediate left - on your right Mr. John Anderson who is Director of Planning of Virginia Ports Authority; Mr. R. V. Davis, Assistant Executive Secretary of the State Water Control Board; Mr. E. C. Meredith, Director of the Division of Engineering , State Department of Health; Dr. Morris Brehmer, Assistant Director of the Division of Applied Marine Science and Pollution Engineering of the Virginia Institute of Marine Science; Mr. Milton Hickman, who is Director of the Marine Resources Commission; Mr. Edwin Holms, who is Director of Research of the Division of Industrial Development; Mr. Julian Alexander, who is Commissioner of the Division of Water Resources, with the Department of Conservation and Economic Development and through a space problem Mr. Elbert

Cox, who is sitting in the audience here who is Director of Commission of Outdoor Recreation. And now to get the official part of this record going it is my extreme pleasure to give you greetings from the Honorable Mills E. Godwin, Jr. Governor of Virginia who unfortunately was unable to be at this meeting but he has asked that we make his comments a matter of record and I'm glad to do so at this time.

Statement of Governor Mills E. Godwin, Jr.

I wish to thank the Federal Water Pollution Control Administration of the Department of the Interior and the cooperating State agencies for convening this meeting to allow our people interested in the marine waters of the Commonwealth to express their opinions regarding uses and management of these natural resources and their concern for their future. I wish also to represent those interested Virginians who are not able to be here.

Constant contact with and obligation to the sea is a part of the heritage of Virginians. Among our valuable natural marine resources and the 4,000 statute miles of shoreline and 4000 square miles of territorial seas, we also enjoy easy access to nearly 13,000 square miles of Continental

Shelf waters. Lower Chesapeake Bay and three major tidal tributaries, plus countless lesser tidal streams, bays, gulfs and lagoons are major resource systems. From these are derived great economic and cultural benefits.

A majority of Virginians live in the one-third of the counties that border the ocean and bay and most industry is here. The largest urban complexes and the fastest population growth is here.

We know that the living things and the waters, bottoms and shorelines including the wetlands are resources of great economic and aesthetic value. Significant commercial fisheries, growing sport fisheries, port development, marine-related military activity and industry, tourism and other recreational activities are directly dependent upon these resources.

Sportsmen hunt the wetlands, residences crowd in on the shorelines, cities and industries drink, use and, often, contaminate the waters.

While the great Northeastern urban complex or corridor (Megalopolis) has recently begun to impinge on Virginia's tidal areas, we still have most of the few remaining undamaged and untenanted coastal barrier islands and wetlands in the mid-Atlantic region. However, pressures of municipal, industrial and recreational growth have resulted in some problems with water pollution, overfishing, competition for access to and space on the waters and struggle over mineral rights. Shoreline development is accelerating, threatening to eliminate habitat for waterfowl and fishes.

As utility of the marine resources has increased and users and use problems have multiplied, the General Assembly and Executive officers of the Commonwealth, urged and encouraged by the citizens, have attempted to develop appropriate management, research and planning mechanisms and programs to deal with these growing difficulties--to reduce pollution and other destruction, to increase use, and to conserve and even preserve their values. We have tried to do this in the interests of present and future Virginians and visitors. We have attempted to enable increased and wiser use of our marine environment and its resources. Though not always successful, our efforts have borne fruit.

In developing what might be called its "Marine Resource Research-Management and Planning System," Virginia has demonstrated her great appreciation of and concern for the marine resources. In the conviction that we must vigorously assume responsibility and take action to insure and enhance the continued multiple-use of our valuable estuarine, coastal and oceanic waters, and preserve the aesthetically pleasing and spiritually necessary attributes of the marine environment, we have established and supported several relevant agencies and programs. These include the Virginia Institute of Marine Science, the Marine Resources Commission, the State Water Control Board, the Department of Conservation and Economic Development and its Water Resources Division, the State Department of Health, and the State Ports Authority. These, coupled with the Soil and Water Conservation Commission, the Commission of Game and Inland Fisheries, the Division of Industrial Development, the Commission on Outdoor Recreation, and the Division of Planning and Community Affairs, are in this System. Many other organizations and agencies, including the Hampton Roads Sanitation District Commission and the various intra-state River Basin associations, as well. Several interstate fishery and water quality commissions have been developed. All these, working with each other, and with appropriate federal agencies, have and will continue this vital work.

Virginia is convinced that if she is to insure the continued multiple use of her estuarine and coastal waters for commercial and sport fishing, tourism and other recreation, port development and military activities, and as a focal point for private, municipal and industrial development, all resources of State and local governments and private interests must be marshalled. We need and solicit cooperation, advice and technical and financial support from the vested federal agencies.

In the spirit of true cooperation, it is essential that private, local, state and federal activities reduce the quantity, where it would be useful, and improve the quality of their waste effluents.

Under our present system of government and organizational arrangements, primary ownership of and responsibility for management of most of the coastal marine resources is vested in State or local governments. Therefore, the prime obligation for development and conduct of sound policies for management of estuarine and coastal waters and their resources must be assumed by these same units.

I am also convinced that, where Virginia's marine resources uses and interests coincide with or impinge on these of other state, we will have to develop additional interstate or regional arrangements for planning and management. Examples of potentially serious interstate problems are the proposals to divert Susquehanna River water into other watersheds, and major channel modification projects such as the proposed deepening of the Chesapeake and Delaware Canal.

In the interests of developing and assuring better coordination of their programs, and better, more effective services to the people, Virginia's water resource oriented agencies have established an informal coordinating committee, with a chairman.

In the interest of achieving wisest use of the estuarine resources of Virginia, I am directing that the relevant State agencies, operating within the framework of their respective legal authority, cooperate in every appropriate way with each other and with the responsible agencies of the Federal government. Additionally, I am requesting that they keep me fully informed of their activities.

At this time we would like to have Mr. Sutherland read for the record a statement from Mr. Spong.

SUTHERLAND: I have communication from Allan Jones who is the Legislative Assistant to the Senator and in part states before the Senator left for Brussels, he asked me to convey his regret again that he cannot be present this morning for the meeting. The substance of the Senator's statement I shall read verbatim.

I am pleased to submit a statement today in support of efforts to restore and protect some of the most important natural resources of my state and the Nation. . our estuaries.

We in Virginia are vitally concerned about the future of our estuarine and coastal waters and their resources, for we increasingly depend on them for jobs, food, recreation, transportation and water supply. Who has not benefitted or been affected by the aquatic life and condition of the Rappahannock, James, York or Potomac Rivers, for example? Each has a valuable estuary. Each, unfortunately, is polluted. And there are many more estuarine zones--in fact, the whole coast of Virginia is composed of a myriad of estuaries. These zones are areas where river waters, the ocean tides, coastal currents and the contours of the shores interact.

These zones and the condition of their waters have been of key importance throughout our history here in Virginia. Some 350 years ago, water was a major concern of Captain Newport when the Susan Constant, the Godspeed, and the Discovery entered Virginia via an estuary and dropped anchor at Jamestown. Apparently, there were no natural springs at the settlement site and early records show that the first settlers tried to draw water from the salty James River--an estuary--but gave up because of the foul taste. Shallow and easily contaminated wells apparently were the principal source of water for those early colonists. Usually, these wells did not provide so-called "sweet water," but at least it was more palatable than the river water. A poor drinking water supply is generally accepted by historians as the chief health problem of early Jamestown and it is probably that this was a major factor in the loss of the colony.

As early as the 18th century, colonial laws to protect the navigational use of inland waterways regulated the construction of dams and other channel obstructions. The state and private interests were actively engaged in canal construction during much of the 19th century. Virginia, through the Potomac River Compact, later was one of the first of the Eastern States to deal with water resources on a regional basis.

Virginians are still dependent on the coastal water resources--perhaps more than ever. Virginia's estuarine resources encompass all the physical, biological and aesthetic attributes of her approximate 13,000 square miles of marine waters and bottoms, and 4,000 statute miles of shoreline, beaches and marshlands. The Chesapeake Bay and its tidal tributaries and the reaches of the adjoining continental shelf are among the most productive of all waters. Much of the economic strength of Virginia is based on these resources.

Estuaries are significant to total human welfare. They provide corridors for transportation, habitat for the production of food, sites for the disposal of waste and a locale for recreational activities.

Estuaries generally have high biological productivity, and their influence extends well into the ocean. The waters of estuaries, including bays, lagoons, bayous, marshes and other wetlands, are the haven for millions of waterfowl of numberless varieties, the habitat and spawning grounds of fish and shellfish which form a staple of the diet of millions of people, and for growth of fur-bearing animals.

Because of their hydrologic and geologic character, estuaries are a natural sink where pollutants gather and multiply in quantity and in complexity. Therein lies the "rub"-- the great danger and threat to the very existence of these essential organisms which depend upon the estuary.

For despite their increasing value to a growing, prospering state, our estuaries have become increasingly polluted. In Virginia, as in other state, the quality of our waters has become a problem as a consequence of population and economic growth. Growth has centered on estuaries. Twenty-five percent of the United States population is clustered on estuarine zones and the wastes of these populations have adversely affected the aquatic environment. We have come to a point in our history where we, as a state and as a Nation, have begun to call a halt to pollution. We are determined not to repeat the Jamestown plight. We are here because we know we must protect, preserve, develop, manage and judiciously use our estuarine water resources to the best advantage of all our people--today and tomorrow.

This meeting represents a significant forward step in the cause of cooperation and conservation of these resources.

We are here to define the value of these rich resources and gather ideas from interested citizens for optimum use and management of the estuaries. Ultimately, on the basis of hearings held in many coastal states, a program for such management will be recommended to Congress by the Department of the Interior in November of 1969.

The study of estuarine pollution--of which this hearing is a part--and the report to follow recommending national action were authorized by Congress in the Clean Water Restoration Act of 1966. That Act and the Water Quality Act of 1965 set the strategy for a nationwide water pollution cleanup and provided the tools to carry out that strategy. Those tools were money to help towns and cities construct needed waste treatment works and conduct needed research and planning; water quality standards to be set by the states and approved by the Federal Government; and enforcement authority to see that those standards of pollution control are met.

In passing the 1966 Act, Congress realized that one area very closely related to water pollution control, and which merits attention, had been relatively ignored and unrecognized--that is, the problems of estuaries and their related estuarine areas.

The development of coastal areas has been very rapid in recent years, but knowledge of estuarine environments has not kept pace with the need to resolve problems developing from such intensive use.

The definition of an estuary, who owns them, and who are responsible for their condition are the types of questions which have plagued us. So a study was approved to fill our information gaps.

Also, detailed information on estuarine characteristics--such as estuarine circulation patterns, rates of exchange of materials with coastal and marine waters, and the ecology of estuarine organisms--must be developed to attain a realistic, essential and effective management of the vital estuarine areas.

Our goal for estuaries must be to expand their use for all citizens--make them clean and safe and rich in life so that many uses may flourish. To do this, we must control the damaging side effects of each use, for each activity alters the natural environment to some extent, adds to the pollution, and changes the ecology of the environment. Industry fills in along the shore to expand its plants. Growing waterborne commerce requires improved channels, thus they are dredged and the spoil is deposited on unused land or shallow water.

Recently there have been accelerated efforts to erect structures to protect the coast from hurricanes or to preserve the recreational values of beaches. The wastes from metropolitan and industrial centers located on estuaries pollute the waters and destroy their use for many purposes. The growing popularity of boating brings more and more people into estuarine waters, along with their discharges of sewage, oil and debris.

Any estuarine program, therefore, must be directed at controlling the harmful side effects of each use of the waters, so that more uses for more people may flourish in that estuary.

Improvement of the quality of our coastal waters will require the fullest cooperation of our Federal, state and local governments, and of private business and industry. Working together, we can preserve and increase one of our most valuable national assets--our coastal resources.

Virginians have much experience in controlling water pollution and this experience must be put to good use. It is interesting that right here in this area, about 55 years ago, people were concerned with sewage disposal. There was an investigation and test program carried on in the Hampton area in connection with the growing of oysters in the area known as Hampton Flats, which lies between Old Point and Newport News Point. The result was the installation of a sewerage system at the place now known as Hampton Institute. The results were due to cooperative efforts among Virginia's agencies, such as the Sanitary Engineers Office and the State Health Department.

Water pollution control must be founded on mutual respect and cooperative effort between the Federal Government, the states, the municipalities, private organizations, individual citizens and industry.

Clearly, water problems affect each of us. I am glad to see so many people of Virginia sufficiently concerned with our water problems to come today to state specifically what steps for action are needed. Yours is constructive concern which will aid Congress in its efforts to promote environmental quality.

I know as a result of this meeting today we will work more effectively together for water pollution control and for the future well-being of the Commonwealth of Virginia.

PAESLER: Thank you Mr. Sutherland. I would like to recognize at this time the Honorable Richard M. Bagley a member of the Virginia General Assembly and the House of Delegates and who has indicated that he would like to make a statement. Mr. Bagley.

BAGLEY: Thank you Mr. Paesler, members of the panel, ladies and gentlemen. It is a privilege this morning for me to apparently be the only representative from Hampton and so I would like to give you the official welcome of our city. I think we are all very grateful this hearing is being held in Tidewater, Virginia and especially in Hampton who has such a vested interest in all matters concerning marine resources. My purpose this morning is to make the gentlemen of the study acquainted with what has taken place in Virginia over the past two years in the matter of preservation in marine resources. I have Mr. Chairman presented your clerk with copies of a study which was authorized in the 1966 session of the general assembly and have as its purpose the seeking of the best possible uses of marine resources of Virginia and the division of their use to all interested parties. Like many states on the eastern seaboard Virginia has found itself with an exploding population with urbanization taking place in many areas and what normally we would let nature and her wisdom portion, obviously it has become a greater problem. Now this commission composed of fifteen Virginians of which I was privilaged to participate, was drawn from all walks of people who are users of marine resources, private citizens, heads of some of our state agencies, some of which are seated here at the head table today, representatives of the recreation division of people who are interested in learning resources, commercial seafood producers and processors. We think that since the study was a unanimous report, that it is fairly representative of the way Virginians feel at this point. I might add that the results of the study in the form of ten bills and two resolutions were passed unanimously in the last session of the general assembly so I think this fairly well states Virginia's position onthe marine resources at this time. I would like to briefly describe to you some of the highlights of the study and you bear in mind that these did subsequently become legislation and most of which were effective July 1st of this year. First the Commission of Fisheries was changed in name and in roll. It became known as the Commission of Marine Resources. Its roll was expanded and it was determined that this would be the price regulator agency for Virginia's Marine Resources in the tidal areas. The Board was increased from five to seven with the specific recommendation which was followed by the Governor in that all of Virginia's Marine users including sports fishing interest would be represented on this commission. Also the capabilities of the marine resources commission were increased by way of added inspectors and inspection boats. In the field of pollution the State Health Department was given new prerogatives in the construction of new marinas. We found this to be a very contributing and unregulated source of pollution in Virginia waters. Boats pollution was specifically placed under Water Control Board. There was some area of concern if perhaps this was not pinned down as it should be and so Virginia's regulatory agencies for both documented and undocumented vessels were specifically given to the Water Control Board. The Virginia Institute of Marine Science were directed to make two very significant studies, one of which had to do with the cataloging of Virginia's Wetlands and Marshlands. This in all their five public hearings held throughout Virginia's tidal area was pointed out as a big problem of the organization and before the Commission could make any disposition of any corrective action it became apparent that we didn't know which tide lands and wet lands were important, which had significance to our marine life, which had not, and so that study along with a study of the perpetual and age old conflict between the Menhaden fishers and the sports fishers was directed in the 1968 session though reporting back in a subsequent session. The sports fishing program of Virginia, the salt water sports fishing tournament was expanded to give them new funds and for the first time Virginia recognized it had a State resource worthy of State promotion in its seafood industry and we did succeed in having funds promoted specifically which in conjunction with Federal funds would both promote our industry. It was pointed out that the country was well aware of Maine lobsters and Louisiana shrimp but Virginia's equally famous seafood products didn't enjoy the same national exceptance. I have this morning left copies of the study. I have, Mr. Paessler, taken the liberty of having the Division of Statutory Research and Development forward to this Commission the ten bills and two resolutions which were passed. I hope that this package of legislation plus the study itself will be of some value Mr. Gardner to you and to your work. Thank you very much.

PAESSLER: Are there any members of the panel that have any questions or comments to make at this time? (No response) I would like to take this opportunity to introduce a member of the audience, a member of the State Water Control Board, Mr. Robert Spencer who is here from Roanoke today and who says he is just going to listen but I would like to say that since he is a member of this team up here that if he has any questions I would like to afford him the opportunity to ask questions if he wishes to. Are there other members of the General Assembly or legislative members here who we don't have record on and who might want to make a comment or statement at this time? (No response) Then I would like to have Dr. Hargis read at this time a statement from the Honorable C. Harrison Mann, a member of the Virginia General Assembly.

HARGIS: This letter addressed to Regional Director Jenson of the Federal Water Pollution Control Administration. Dear Mr. Jenson: Thank you for your invitation and the opportunity to be heard on November 18th. I regret that I cannot be present as I have another engagement on that date. I wish however to express my opinion on several matters of interest to the study. First, the problem of estuary pollution while local in creation is an interstate problem affecting broad areas and should therefore be dealt with on that basis. In my judgment there should be federal standards applicable across the board to all esturine areas. Responsiblity should rest with the States to enforce those standards with federal enforcement if states fail. Second, priorities must be assigned to the stemming of pollution. It is ridiculous in my opinion to even be considering the control of minimal pollution contribution of small pleasure craft while tolerating mass pollution by cities, towns, and industries.

(Special Note) I own no pleasure craft. When the major forms of pollution are brought under control there will be opportunity to discuss lesser form without jeopardizing the need for action with respect to the major culprits. Very truly yours, C. Harrison Mann, Member of the House of Delegates.

GARDNER: We have received many statements to be included into the record. Late yesterday we received a communication from Honorable Clyde L. Devow, II, a member of the Virginia General Assembly representing Fairfax - Falls Church sending his regrets that he would be unable to attend and indicating that he would submit a statement. At this time I would like to recognize Mr. DeCamp from Washington who heads up the National Estuarine Pollution Staff. For our next presentation I call Mr. Frank H. Miller of the Hampton Roads Sanitation District. Mr. Miller.

MILLER: Mr. Chairman I'm afraid I represent the first of those who may be called pollutors as I'm one who has these wastes to dispose of and has to find practical ways to do it. I'm a little bit afraid that if we came a little bit to a count here today that the pollutors here would be right much out numbered by those who are telling us how we have to do that to make it work effectively, but we do try a good deal harder than some of you may believe.

I am very grateful for this opportunity to appear before this hearing, to which the Congress has assigned the most commendable purpose of preservation, study, use and development of estuarine waters.

If I may briefly identify myself, mine has been a long and loving association with the waters of which this meeting is concerned for many years. I came here and worked with the Crohurst survey in 1934 as a recent Sanitary Engineering graduate from Virginia Tec I worked for the Virginia State Health Department some seventeen years and as such was supervisor of Shellfish Sanitation for about five years with that agency doing survey work which classified the use of these areas. I served on local and state committees, concerned with the use of waters, fisheries, recreational uses and since 1949 I have served as Chief Engineer and later as General Manager and Chief Engineer of the Hampton Roads Sanitation District. This is the overall interceptor-treatment agency responsible for pollution abatement for some 1250 square miles adjoining the lower Chesapeake Bay and its tributaries. Finally, during all of my 58 years I have been a devotee of boating, fishing and other recreational uses of these waters, so feel in addition to a professional interest a considerable personal interest in them. Senator Spong commented on the original colonist who came over on the Susan Constant, the Discovery and the Godspeed as having water problems even in those days. I have another honor I think by certificate on my wall in the office who is a member of the crew of the Susan Constant. Back to the Hampton Roads sanitation district I believe I need to cite no support for the statement that the District Commission, since its initial work in 1947, has continuously demonstrated its concern and dedication to the same objectives for which this conference is organized. Assigned by the Legislature of Virginia with the responsibility of pollution abatement in these waters in 1938, the District now includes systems having a replacement value in excess of $40,000,000 to which it has added facilities, including both interceptor and treatment, at a cost of more than $16,000,000 in the past five years. It projects programs which will require expenditures in excess of $8,000,000 in the next four years, and long term improvements through the year 2000 having an estimated overall total cost exceeding $100,000,000. The District presently serves approximately 600,000 persons and its systems are planned to serve about 800000 within the next ten years.

The systems for which the District is responsible basically utilize the concepts which are recommended in 1934 by the Public Health Service-State Health Department report, and which have, in every instance to date, received the approval of the State Health Department and the Water Control Board of Virginia. They have also received the implied approval and commendation of the U. S. Public Health Service as the Federal agency responsible for shellfish supervision, and the work of the District has been cited by Federal Pollution Control authorities over the years as a model which estuarine communities, similar to those in this area, might well follow. In terms of treatment results, the District has consistently produced in its primary treatment plants effluents of less than 30 PPM BOD which has never resulted in oxygen depletion in receiving streams or problems incident to point where settleable solids have been near nil, there is no evidence of sludge banks, nor is there evidence of other problems associated with the solids removal standards which we have been able to achieve.

We have, within the last year or two, heard increasingly of the need for secondary treatment without support by survey or factual determination or demonstration of the value which such treatment may have in this area. I feel very strongly that your deliberations should evaluate this need and, at the same time, evaluate the constructive benefits which might be accomplished. We can only tell you at this time that the estimate of cost to the people of the Hampton Roads area to provide secondary treatment is in the range of seven million dollars. It has been the attitude of the Commission, in which I fully concur, that when there is reasonable evidence to show that a need exists for secondary treatment, and that constructive stream uses will be commensurately enhanced by the expenditure of this some seven million dollars, then the Hampton Roads Sanitation District will, without urging of any local state or federal agency, recognize and accept its obligation to provide such facilities. Conversely, if the expenditure in this magnitude will not serve to reasonably enhance the waters to which these effluents are discharged and the constructive uses of them, then the Commission feels it would be an unreasonable imposition on the people that it serves to authorize such expenditure. For the purposes of determining biologically, bacteriologically, and chemically the present effects and the enhancement which might be expected, the Commission has authorized the Virginia Institute of Marine Science to undertake a twelve month study to fully develop these facts, of what can be expected from secondary treatment or enhanced treatment or whatever kind it might provide. This study is in no way directed, and I think Dr. Hargis and Dr. Brehmer will vouch to you, it is a study we have asked them to produce for us information which gives a basis for judgment. If that judgment says a certain thing should be done which is going to cost money, then I presume we have no choice or desire but to spend that money to accomplish those purposes.

Concerning uses of area waters, I do not feel it is a defeatist attitude to recognize some of the practicalities which are involved, and I would suggest that in this hearing these practicalities be given more consideration then it would appear they have at times in the past. It is axiomatic, for instance in shellfish work, that fresh pollution carries a great deal higher hazard than does that which has been through treatment plants, or which has been subject to attenuation in salt water for some length of time. I think Mr. Jenson worked on shellfish work and will vouch for that fact. Correction of fresh pollution from vessels, particularly those of the Navy, now seems remote. Overflows contribute both raw sewage and contiguous discharge. Let us at least foresee correction of some of these conditions before we place in essential status expensive plant refinements that may provide comparatively little betterment. As a practical matter, recreational use for swimming, skiing, and boating and fishing takes place in the vicinity of almost every one of these outfalls where primary treated effluent goes over. I don't condone this or say that it should necessarily be, however strictly from a bacteriological standpoint or I would think from an epidemiological standpoint this recreation and these carriers have no adherent hazard. Waterways values are not limited, nor am I at all times convinced they are always even primarily related to the more technical aspects of water pollution. Silting, destruction by filling, permitting derelicts to accumulate, oil flow, debris, overfishing with nets, crab pots, etc., phosphate-nitrogen nutrient effects, etc. are all factors which have a distinct bearing and must be considered. I feel it quite possible that pursuit of higher objectives in all of these areas must move in unison if we are to secure the best use of waters of the type we have here. There is no great point in restoring waters for recreational use if you turn around after you have restored them and allocate four or five square miles to take care of spoil, yes all your spoil away cost money but these waters are gone once they are filled so why worry with protecting them if you are eventually going to take them for uses of any kind that prevents the ultimate and highest best purposes as waters.

I would like to discuss briefly some of the things which I think are important. This pollution from vessels would certainly be one. Shipping and naval vessel concentration contribute materially to area pollution. I believe it would not be an unrealistic estimate that five to twenty thousand total population might at any time live aboard vessels in these Hampton Roads waters. For example, two airplane carriers with merely standby crews aboard would represent two to three thousand persons each. Support vessels with perhaps one to two hundred aboard would account for another perhaps two thousand persons. Piers where these vessels of the United States Government tie are less than two miles from major resort-recreational areas. There just has to be a significant pollution or effect by bacteria in these discharges this close to the areas that are used for recreational purposes more intensively than are any in the vicinity.

Overflow that occurs is something that I think is very significant and we need to give a great deal of attention to. Overflow due to storm flow, high ground water, flooding by tides, or power failures occurs to a degree which is not now known and I say it is not now known without any fear of argument. I don't think the Water Control Board knows what happened, the State Health Department doesn't know what happened and I don't think the cities of the area know and we are only beginning to learn because within the last two years we put in devices which do tell us something of the effect that these things are having. We have in our 43 stations for instance 38 installations for timing devices that at least tell us the duration of time on storms, heavy rainfall, whatever might have occurred, high tides the duration of time when the level in the sewers has been at or above their overflow level so we can begin to interpretate - interpret something of the information we had. It should be recognized, however, that the District operates only some one-tenth of about four-hundred and fifty pumping stations in this immediate area of Hampton Roads, and that's one awful lot of potential trouble when you are around 450 pieces of mechanical equipment any one of which is subject to the failure of mechanical equipment can have built into it. None of these stations that I can recall of the whole four hundred and fifty has standby power and most of them are built without regard to infiltration. Many years ago when it was no factor and I'm not being critical in saying this, that the sewers were built without regard to infiltration or storm water exclusion or flooding exclusion from them. I had a man who I very highly respect who is one of the outstanding public works engineers of this area made a statement to me about fifteen years ago that one of the best services rendered by the domestic sewerage system that was put in the area and this was a large one, was to lower the ground water table in the area about four feet. This is a little in conflict with what I feel to be the purposes of sanitary sewer but this is about the method that was used to install many of them. These discharges from lateral sewerage systems or pumping station overflows normally occur in headwaters where assimilation capacity is low, dilution is low but where in many instances the skiers and the swimmers and the people playing on the banks of the river and some shellfish users are more intense on that then any other point.

Mechanical in Process Failure: Mechanical in process failure also are necessary a fact. I frankly think that mechanical and process failure is one of the lesser factors we need be concerned with and although it is one that needs to be investigated to a considerable extent small boats have come in for a great deal of conversation and they do constitute to say the least a most difficult problem. The effect is perhaps minimal at moorings - except at moorings and in headwates where boats are concentrated in or are in close proximity to swimming, skiing or your higher uses of adjoining land for residential purposes. Treatment devices available leave much to be desired and shore facilities for persons at docks, piers, marinas and similar harbors are woefully inadequate. We in the District's offices have tried to exercise some concern which would at least - as much as two years ago we wrote to those interested hoping we could stimulate some interest in upgrading the available facilities on shore. Representative Mann said that he had no selfish interest, I do. I own a boat and enjoy it very much and at this moment I don't know what Mr. Paessler, Mr. Davis, or Mr. Jenson can offer but I do not know the practical answer to this business of pollution on a boat. I cannot believe it is merely grinding it up in a chlorinator macerater and putting it back overboard and I have a real good idea as a boat owner what a good many of them would do if it required tax and then these complicated and unworkable/ devices are pumping out on shore. My thought at the moment is that perhaps one of the most constructive approaches was when these boats come into marinas and small docking places that there be adequate clean and convenient facilities on shore which not one in twenty of them today has I can assure you. With this people could be at least educated to go ashore and use them to some extent.

Nutrient pollution is extremely serious to us. We know at this time and I perhaps could be corrected, I think I'm quoting correctly from conclusions of the Water Control Board Study, of two major streams in the area, by name is Lynnhaven River and Eastern Branch which in certain areas, Eastern Branch particular I have seen it repeatedly during the past summer, foul and unable to support normal marine life, fish, crabs or any of them during a good part of the summer due to the discharge of secondary and tertiary treated effluents in the streams but by that discharge contribution of high nutrients, phosphates and oxygen to the stream. Hopefully some of these discharges will come into the Central District system in the near future. Some we know will and we need these loads a great deal but this leads me to the question of what happens when our own discharges. . . now we can't take all of the discharges we have in any practical way into waters where we have forty feet of depth and control that. I'm not at all sure if we continue the discharge of treated effluent and secondary doesn't help this as some of you know. Secondary does nothing to alleviate this problem of nutrient pollution and in the Eastern Branch, unless I, in my forty years of work in this area have been misled, it is nutrient pollution which leads to the depletion of DO and an unliveable condition in that stream. I would suggest that secondary treatment as such would be little or nothing towards nutrient removal, should be very carefully weighed with regard to the developing nutrient situation. Little except conjecture would now guide planning as to what need exists or what should be done in this area. Let me dismiss with just the comment that runoff and silting I think are horribly serious. One of the most constructive things I remember seeing recently in terms of pollution that causes trouble to all concerned is this runoff and silting in this business of the Corps of Engineers now requiring stilling bases which they did in

Mill Creek. I think it was 100 feet by 100 feet by 8 or 10 feet in depth where materials coming in can settle and be dredged in some more orderly way. I can cite to you a cove within a short distance of us that was dredged to depths of perhaps four or five feet as recently as six years ago where they are now about two feet. The same cove every fall when you get runoff into the culverts along the sides of the street carries all of these leaves dropping into the stream and every summer - this is in the cool and cold weather up here and every summer when it then turns warm and this material starts to degenerate you get an oxygen depletion in the stream, an absolute septicity of the water in it. If you pump that water into the suction pipe of a head and it stays in there as much as seven hours, when you pump it through you have a pure hydrogen sulfide odor in the area. I think it is very important that we try to do something about this runoff and silting and preserve our waters by what we do. In addition to the problem areas which I have specifically discussed the best use, development and preservation of area waters should fully consider reduction or prevention of total loss of areas by deliberate filling as spoil areas, dump areas, derelict collection piles, encroaching bulkhead lines, etc. In the last quarter century in the area probably well over 3,000 acres, or five to six square miles, of water area a good part of which was available for shellfish, and all of which was available for some type of recreational use is no longer available. It has been eliminated as a water area completely.

On the plus side of the Tidewater Virginia Pollution Control ledger, much has been done, beginning as early as 1947 to offset the pollutional effect of a population which has more than doubled and the remarkable growth of shipping into the area and rapid industrialization of it. Oceanography of the area has been of great significance. Water salinity in much of the area receiving District discharges and those others we do not handle is substantially the same as in the ocean waters which they immediately adjoin. This effect of the nearby ocean plus deep channels, strong currents, unrestricted entrances and strong mixing patterns, provide a most favorable environment to receive reasonable quantities of oxygen demand and suspended sdids. And here of course by methods we know today we cannot get rid of all of it no matter what we do, we still have some residual that we have to let the stream help us with. Bacterial regrowth after chlorination is strongly attentuated and in many other ways we see no effect by physical, chemical and bacteriological characteristics of effluents that would I am frank to admit be under conditions of many head water streams that are free flowing fresh flowing streams almost intolerable.

There are, in my opinion, definite current information needs other than the limited amount of information that has been obtained for shellfish purposes. I do not recall any intensive survey or any survey of consequence to develop facts since the Crohurst Survey in 1934 in an area of this consequence and this importance I think that is not in keeping with the needs of the situation. Almost no comprehensive information exists as to these important waters to define what pollution occurs in them or where it comes from. May I suggest a first priority effort jointly between all of the local governments and agencies involved in wastes collection or disposal and state and federal regulatory bodies to determine the projected effect which continued growth and industrialization will have on these waters; the present quality of these area waters; what is the pollution load by shipping; where there are no logging of records that show you how many people what effect might be under any given set of circumstances. I do not believe even that the little bit of shellfish bacteriological work that gets done has a record to go with it of how many people are on ships in the area at the time that work is done. We need an overall time to know what our facts are and what they need; what is the pollution load by shipping; where, when and to what degree does raw sewage overflow from the some 450 pumping stations in the area or from the systems which they serve; what is the present and projected effect of nutrient pollution and what needs exist to accomplish the practicable upgrading of these waters to assure their continuing reasonable and constructive use.

In summary, I would hope that all of us who share a deep concern for the preservation and highest and best uses of these estuarine waters with which we are blessed should, with due recognition of the limits of funds and capability available to us, carefully evaluate the total situation which exists and place priorities on those things to which our problems most closely relate.

Mr. Chairman I apologize for taking so much of your time at this meeting and thank you for the opportunity to present this statement.

GARDNER: Do members of the panel have any questions from Mr. Miller?

R. V. DAVIS: Just a comment or two. I think he pointed out the problems in this area very well and stated them better than I could state it. Two comments I would like to make in regard to the boat conditions. I would like to point out the Board has held the responsibility of coming up with rules and regulations to control water pollution. This law became effective October 1st of this year and during the past several months a Board staff has been busy collecting information insofar as what all the states are doing and what the federal government has been considering insofar as federal legislation along this line.

One of the problems we face in developing control of
boat
/pollution from present craft is the interstate traffic. If
which should be
we adopt regulations here in Virginia/applicable to boats
coming from Maryland or North Carolina, but this is the consideration which is now before the Board,the adoption of these rules and regulations. We have had several state agencies to consider this and we are no where near the point of making a recommendation to the Board. Hopefully in the next six to eight months we hope to be in this position but we are not real sure. As Frank Miller has pointed out there are no suitable devices to control this that have been acceptable to date.

The other point I would like to make has to do with the nutrients of Richmond as the Eastern Branch of the Elizabeth River and the Lynnhaven water fill. They have been studied by the staff and considered by the Board in the past. It will be before the Board at it's meeting tomorrow for further consideration.

E. C. MEREDITH: I think Mr. Miller has pointed up the principal reasons why the bulk of the shellfish growing areas in this area are condemned. That wasn't really the point I wanted to make. I wanted to comment a bit on this marina situation. Mr. Bagley mentioned that the last assembly enacted a bill which gave the State Health Department the responsibility of coming up with rules and regulations that would govern the disposal of waste at the marinas, not waste from the boats themselves but at the marinas. We are in the process of working up rules and regulations or proposal that would cover this particular matter and I am very hopeful that before too long you will see some of the on shore facilities that Mr. Miller mentioned being so much needed.

GARDNER: Are there other questions from the panel? If not I have one I would like to ask Mr. Miller. You did identify many of the estuarine pollution problems

I wonder if you have any ideas as to where the management responsibility might lie, would it be local, state or combination, federal or a combination of federal, state and local?

MILLER: It is necessary cooperative at all levels. I don't think there is any escape from that. It has to include those of us who are directly and locally responsible to be effective. I would believe that it best be done by - I don't like the word committee - but a grouping of these efforts at top level implemented at where it was most practical to carry on the field activity. I feel very strongly personally in the capability of the State Water Control Board both based on the accomplishments they have had since 1949 and what I think they can do to take care of this job in an adequate way. I don't, however, take away at all the effective place which the federal agency can have, particularly in areas where federal and local agencies are involved.

GARDNER: Do you have any feeling with regard to zoning. For example you mentioned landfilling, encroaching upon the estuarine waters, do you think zoning might be a method of overcoming some of this?

MILLER: No, I think the water resources body must be organized at a top level which will take in all of these factors. It is in my opinion pointless for those of us who are concerned perhaps just with sewerage disposal, waste disposal to go our independent way of those who are using water which may be restricted channels that was discharged so I think you have to have an overall body to consider all factors.

GARDNER: In other words a combination of water quality and man use plan?

MILLER: That's right.

GARDNER: Do you have any feeling as to the use of physical and/or mathematical models in assisting and evaluating those treatment needs?

MILLER: There are greater systems, there is no question about that and I with everyone else here is hopeful that this Chesapeake Bay model will shed a great deal of light on our problems here. I believe however that we need certainly in conjunction with that, if not a continuing, at least a reasonably frequent intensive effort to determine what the situation is from all aspects and to be guided by it. This I think we have had very little.

GARDNER: Thank you Mr. Miller. I call upon at this time Mr. Maurice Thorn from the Westmoreland County

Planning Commission. Mr. Thorn.

MAURICE A. THORN: Mr. Chairman and members of the panel, ladies, and gentlemen my name is Maurice A. Thorn. I'm from Westmoreland County in the northern neck of Virginia, and represent the Westmoreland Planning Commission. There are many, many serious problems concerning the Chesapeake Bay area. It is hardly possible however that any person in this room can question that pollution is the most immediate and potential threat to the entire Chesapeake Bay and its estuaries. There are of course many types of problems. At this time human waste was causing the greatest concern as large areas have already been made unsafe for practically any human use. There seems to be no likelihood of the abatement of this in the near future, but the sewage problem is being given serious attention.

There are still areas in the estuarine zone that are relatively clean but these areas are now being threatened seriously by the proposed location of a petroleum refinery or refineries with the certainty that there will be oil spills of varying magnitude. The assistant commissioner for Environmental Health Services of Maryland State Department of Health, Mr. James B. Colter says "The accidental spillage or careless discharge of large quantities of oil or other hazardous substances into Chesapeake Bay could have widespread catastrophic consequences. Should a large tanker rupture or in some way spill it's cargo into the Chesapeake at this time, the damage to property and wildlife would be enormous beyond calculations because we are not prepared to cope with the situation." Mr. Russell Crane President of the Conservation Foundation and Chairman of the Board Potomac Basin says "We really do not know how to prevent spills or how to clean up after they occur and we also don't know much about the degree and duration of ecological damage from such spills."

The Assistant Secretary of Interior,Mr. Max Edwards said "Oil is the life guard of our modern industrial society. It fuels machines and lubricates the wheels of the world's production but when that vital resource is out of control it can destroy marine life and devastate the environment and economy of an entire region. The plain facts are that the technology of oil, it's expansion, it's transport, it's refinery and use has out paced laws to control that technology and prevent oil from polluting the environment."

Oil pollution, a report to the present Congress and a special study conducted by the Secretary of the Interior and Secretary of Transportation issued February 1968 is a publication that adds emphasis to the danger of oil spills and consequent pollution. I could quote many other authorities. Their evidence adds up to this, oil spills cannot be prevented. No techniques are presently known for successfully containing oil spills or cleaning them up after they have occurred. The Chesapeake Estuarine Zone must be used for marine transportation, that is absolutely recognized. Under no circumstances however should more crude oil be allowed to pass through the entrance to Chesapeake Bay.

AT Saint Mary's College, Maryland, The Potomac River Citizens Committee and numerous other organizations concur in ex-governor Carr's proposal that there should be a regional approach to the problem of developing a sound policy and control of the Chesapeake Bay and its estuaries. It is to be hoped that the water resources agencies of Maryland and Virginia and the Federal Water Pollution Control Administration will not become convinced that oil spills can be prevented,successfully contained or cleaned up after they have occurred.

Now for another type of pollution I have here a letter and statement from the Chairman, Mr. W. C. Garrett of the Tidewater Soil and Water Conservation District of the Virginia Association of Soil and Water Conservation Districts which he asked me to present for the record. Mr. Garrett describes some of the problems and consequences of shore and river bank erosion. He points out that erosion of valuable shore front occurs annually causing considerable financial loss. The public interest is involved as eroded material causes siltation in all waterways which adversely affects fish and wildlife, reduces recreational potential and makes expensive dredging necessary in order to keep navigational channels open.

Mr. Garrett further states that State legislation is needed to protect individuals and communities and since the public interest is involved, he advocates some form of cost sharing should be adopted.

Would you kindly include the statement of the Tidewater Soil and Water Conservation District in the record of this hearing. Thank you very much.

Statement of the Tidewater Soil and Water Conservation District, Bowlers Wharf, Virginia.

Estuarine Values and Problems.

Eastern Virginia with its many hundreds of miles of shore line is directly exposed to all the hazards which contribute to erosion and sedimentation. The irregular coast line is made up of many rivers, bays, creeks, inlets, and estuaries. The erosion taking place is aggravated by winds and accompanying storms, fluctuating tides, ice, and debris. Many records on file indicate that this problem is not a new one. Augustine Washington stated upon building his house in Westmoreland County some 200 years ago that the Potomac will one day reach the house. Today the foundation is falling into the river. The isthmus connecting Jamestown Island to the mainland has long since washed away. The first landing site and the site of the original fort have disappeared into the James. The Yorktown Surrender Grounds have lost over 125 feet to the York River.

The problem of river bank and shore erosion continues to accelerate with two major losses resulting: (one) the loss of our most valuable land along the tidal waterways. Some properties have lost as much as 20 feet in one storm. The annual loss is estimated between two and three feet.

(Two) the sediment and silt resulting from this erosion are muddying our waters, closing many streams, adversely affecting fish and wildlife, reducing our recreation potential, and last but not least, causing a never ending dredging operation which costs millions of dollars annually just to keep the silt pumped out for safe navigation.

The population along all our waterways is increasing annually, therefore, the loss of our valuable property becomes a concern of more and more people. Hundreds of farms are being developed annually by corporations who show little concern for river bank erosion. These waterfront lots are sold; expensive homes are built with the owner suddenly realizing that his investment is being slowly washed into the river.

As a member of the Shore Erosion Committee with the National Association of Soil and Water Conservation Districts, we have long been interested in an approach to a solution to this widespread problem. We who have lived along these waterways have not only observed the pollution and loss from erosion, but we have actually experienced it. Many millions of dollars have been spent by property owners trying to stop or even slow down this continuous loss. Most of these efforts have been of no avail. Most of the structures have been poorly conceived, improperly built, or constructed of inferior material. Some few have succeeded but it is still hazardous from an individual's approach, which involves just a hundred or so feet.

We feel that an approach to this problem should be undertaken as a community or group organization along a natural physiographical unit of shore line rather than to short reaches defined by individual property lines. We further feel that some form of cost sharing with these communities could and should be considered. Such a plan could well be patterned after Public Law 566. The sponsor of such a project should be a political subdivision of the State.

The time for an action program is late. We can ill afford to lose any more of our valuable property or allow our waterways to become silted to the extent of jeopardizing the future uses. The problem cannot and will not solve itself. Only by many groups, agencies, and individuals working together towards a common goal can we expect to protect and conserve one of our most valuable natural resources.

HARGIS: Thank you Mr. Thorn does any member of the panel have any questions or comments relative to Mr. Thorn's statement?

JOHN R. **ANDERSON, State Ports Authority:** A Study has recently been conducted by the Department of Transportation and I don't know if everyone is aware of it, on the Torry Canyon in which the Coast Guard has conducted an actual experiment that contained oil spills and this has been done throughout the United States. I don't know if the results of this study have been completed yet but they should be complete sometime this year.

HARGIS: Are there any other questions or comments? Thank you Mr. Thorn. At this time I would like to recognize Honorable Walter B. Fiddler, Delegate from Warsaw in the Northern Neck area. Mr. Fiddler would you like to make a comment?

FIDDLER: (Will give statement later.)

JOHN JOSEPH BEECHER; who represents the Norfolk Chapter of the Isaac Walton League. I would like to make a brief statement. Mr. Chairman, ladies and gentlemen of the panel and ladies and gentlemen of the audience. I happen to be/a Co-Chairman of the Norfolk Chapter of the Isaac Walton League and we are very interested in this estuarine problem. Now go back a few moments - take a few moments of your time to tell that I have been engaged in this water pollution and associated problems for many years, and I also say by experience I have some knowledge,by technical education very little,but by education by experience- - - you don't run out of things you run out of ideas. I think that was one thing - - Mr. Kingera, he had about 4000 patents in the patent office at the time he died. A great many of them were used successfully. He always said you run out of ideas rather than run out of things. I think of that in the case of ideas and thoughts such as the problems we have. Let me speak of one thing before I go back to the other. I think the questions of zoning is very essential to the use of our stream. For years we have tried in Norfolk to get the Planning Commission to consider zoning, consider water planning, the uses of the stream as much as we consider planning of streets or traffic because the streams are already so crowded basically. We have given a lot of time to the location of gas stations, pool rooms and associated minute problems but the problems of streams is just as essential. May I say this, I have been engaged in this water pollution thing for some years. It is my happy privilege to go back to be associated with Honorable A. Willis Robertson in 1930 when he formed the Virginia Cooperative Committee of Stream Pollution. We had many meetings. Some meetings here at the Chamberlain but out of the growth of that Cooperative Committee on Stream Pollution we had an interest especially in the Hampton Roads circuit. I happened to be Vice-Chairman of the original commission, that is before the effective body which Mr. Miller represents and which he spoke to all this morning. We led in all of the effort that was necessary both legislative in getting referendum passed in doing all the things necessary to form the Hampton Roads Sanitation Commission and Mr. James F. D of Hampton was our first Chairman and prior to that on the Cooperative Committee on Stream Pollution was Mr. Richard Armstrong, also of Hampton. So it was in this hotel in 1934 or 1935 that we had a meeting with Secretary Aikes and some others, they had no official capacity but they led with their effort towards doing something about pollution. At various times we have undertaken we don't think the question of stream pollution has been solved either by the Hampton Roads Sanitation Commission, we believe there are other things which it can do, and we do hope and sincerely solicit the activity of this commission because we do think they are aware of the dangerous problems. Mr. Miller mentioned some of it like the spoil disposal area. They reduce the ability of streams. We left with some degree of subrogation on the enlarging of the disposal area of Spring Island. You take that out of the stream and reduce its ability to go back and forth, we have in the vicinity of this hotel a very wonderful project the Hampton Roads Bridge Tunnel but we were a little bit worried when they extended the fill from Hampton instead of building a pressure wall. We were also worried about the effect on our streams by the location of the tunnel in Chesapeake Bay. We thought it should be about ten or fifteen feet deeper in the channel area than it is. There are various things I think we have to give our attention to but we know that the question that pollution was slushing back and forth when we look out here through the window and see this tremendous territory of water of Hampton Roads and know that it has five - about five different areas of pollution, we know that it is something real. I wish to tahnk you for allowing me to make this statement and the Norfolk Chapter of the Isaac Walton League has a continuous interest in pollution, we have other chapters in the area which are just as interested as we are. We look upon the division of the Hampton Roads Sanitation Commission for communities allowed to adopt an escape hatch and get out of the commission, we look at that with great apprehension. In the legislative time or the activity that went to form the employment act commission as a practical matter they had to allow communities, we had to provide legislation so the communities could use the escape hatch because we were afraid we made it to rigid and including everybody maybe it would break up the district. Like the City of Portsmouth is not in the Hampton Roads Sanitation District, it is geography but it is not actually and has old treatment there and we think it is quite ineffective and it falls under the laws to meet the standards of the Hampton Roads Sanitation Commission but from my experience on the water and otherwise, it comes far from meeting that and so we do think that the whole thing - the pollution courses may be most in our thought but this estuarine pollution is - estuarine study is a very big study and I think we should do everything to make it succeed and every contribution we could make to it we are very happy to add to it, and I do thank you.

HARGIS: Thank you Mr. Beecher. Are there any questions or comments from the panel? Thank you very much. At this time I would like to ask the Norfolk District Colonel Adams to come up.

C. E. ADAMS, JR., Dr. Hargis, members of the panel I have given the reporter a copy of the comments I will make.

I appreciate the opportunity to be able to participate in the hearing today in connection with the study of the clean water restoration act of 1966. The Norfolk District of the Corps of Engineers of the United States Army is fully aware of the value of our estuaries and estuarine areas . We are vitally interested in the study of pollution problems involving all of these areas in the Commonwealth of Virginia which coincide with district boundaries. We believe it to be incumbent on all federal, state, and private agencies to work together to the end that conservation receives its full share of consideration in the development of our natural resources. This is particularly true of our estuarine areas. I might add that the District Engineer of the Baltimore District has requested me to represent him at this hearing because of his interest in the upper Chesapeake Bay area. The Baltimore District made a presentation at a similar hearing at Annapolis on the 30th of October of this year. That statement included a full discussion of the scope of the congressionally authorized Chesapeake Bay study which is being accomplished by the

Baltimore District, and as a result I will not dwell at any length on that Chesapeake Bay study.

Now the Corps of Engineers has the responsibility under federal law for the development of water resources projects for navigation, flood control, drainage, shore protection, and hurricane protection, as well as other associated purposes. We are also charged with the preservation and protection of navigable waters and the public rights thereto. The Corps of Engineers is a service organization. Now in this capacity the Corps investigates and studies projects requested by local interests through their duly elected representatives in Congress. Projects found to be economically justified and physically feasible, become eligible for construction under various congressional authorities, subject to compliance by the local interests with the terms of cooperation which may require a cash contribution, furnishing of necessary spoil disposal areas including retaining levees and spillways, or the furnishing of lands, or rights-of-way, easements, or whatever other items necessary for the project development.

Now there are sixty-five active navigation projects in the Norfolk District involving some 700 miles of waterways. Of this mileage, a total of 167 miles has been physically dredged, at one time or another. Project channels having depths from 30 to 45 feet serve the ports of Norfolk, Newport News, Portsmouth and Chesapeake. A project channel with a depth of 42 feet extends through the Chesapeake Bay to the port of Baltimore, Maryland. Other channels have lesser depths down to a minimum of four feet. In addition to the 700 miles of waterway on which improvements have been made, there are a number of other waterways within Tidewater Virginia on which no improvements have been made and which serve navigation in their natural state.

Historically, our waterways were our first and only avenues of communication and commerce. Even today, our larger and more improved waterways continue to serve the nation in the very important and essential field of low cost water transport. It was only in the latter part of the 19th century that we began to recognize our waterways as a valuable fish and wildlife habitat, and even later, in the early part of the 20th century, before we began to realize and appreciate the recreational potential of our numerous natural waterways. Today, there are many diversified, and sometimes conflicting uses being made of our waterways.

Aside from their use for transportation, many are used for the commercial production of fish and shellfish, and a host of recreational uses including fishing, boating, swimming, skiing, and other water-oriented sports. In addition, various industrial uses have gradually come into being. These include serving as sourves of water for cooling power station condensers, both conventional and nuclear power, as carriers of effluent from sewage treatment plants, for washing of commercial products and many similar purposes.

Planning by the Corps of Engineers for navigation projects in the Norfolk District includes consideration of such matters as layout of channels and structures; the effect of the proposed changes of shoaling patterns, circulation, the tidal prism, salinity, and marine life and other environmental factors to minimize damage to or to enhance the value of estuarine areas. Inevitably, in some cases conflicts arise between interests favoring a waterway improvement and interests who believe that the improvement will damage the marine environment. These conflicts may be generated but when the proposed channels conflict with valuable shellfish grounds or fish spawning areas -- or when dredge disposal areas have a potential for damaging such areas as adjacent rich marsh areas. Questions may be raised as to whether shore disposal destroys valuable wildlife habitat, or whether turbidity created by dredging alone interfers with the spawning of fish.

In conducting our dredging operations, we make every effort to follow the recommendations of the cognizant conservation and anti-pollution interests with respect to timing of dredging operations, location of disposal areas, and the method of disposal. In some cases, for physical as well as economical reasons, the optimum objectives cannot always be met. As may be understood readily, the cost of a dredging project will increase greatly if the material must be pumped long distances or transported to a distant disposal area by scow or hopper dredge. An alternative that must be considered is the possibility of depositing the material in closer open waters. In such cases, it is necessary to carefully weigh the actual need for the dredging against the potential adverse effects on the marine environment.

In connection with our dredging projects, at the beginning of each year we submit to the FWPCA in Charlottesville, also to the U.S. Fish and Wildlife Service in Atlanta, and initially to the Virginia Institute of Marine Science, our complete program for the coming year. This includes the location of the dredging, quantities of material to be removed, and proposed disposal areas. Any comments that may be received are given every consideration before the work is undertaken.

One of the major activities of the Norfolk District in connection with the reduction and prevention of pollution of estuaries is the district engineer's function by congressional direction as supervisor of the harbor of Hampton Roads. For this purpose, the law defines Hampton Roads as consisting of all tidal waters of Virginia tributary to Chesapeake Bay and the Atlantic Ocean. As you can see, this is a very large area reaching well up towards the Washington, D. C. area. And the program is conducted through an intensive education and information effort to make all appropriate local interests aware of the laws and regulations regarding pollution and the importance to the entire community of strict adherence to them. The harmful effects of oil pollution on recreation, fishing and conservation are vividly illustrated by photographs of oil-soaked bathers, beaches, boats, fish and various waterfowl.

In order to detect and stop violations of federal river and harbor laws concerning harmful deposits into the water, in my responsibility as supervisor of the harbor, we operate comprehensive patrols of waterways and shorelines. We use aircraft, boats and automobiles. Any violations noted during these patrols are thoroughly investigated and, depending upon the circumstances of each case, appropriate action is taken to correct the situation. Action may range from a warning letter to action in a federal court.

Now another area that receives close attention in connection with pollution abatement is dredging and related waterfront construction activities. Whether the work is performed by the Corps of Engineers or under permit, the plans are carefully examined to ensure that all necessary precautions are taken to prevent any pollution. Overboard discharge of dredged material is not permitted except in areas where experience has shown that no harmful effects will result. Permits for dredging and filling are not granted until a determination has been made that no undesirable effects will result. These activities are coordinated with cognizant federal and state agencies. After a permit is granted, corps of engineers inspectors make regular checks to ensure that all operations are conducted in accordance with the terms of the permit.

I was asked to consider the administrative and technical opportunities for future estuarine management and research needs. While I cannot be specific, it appears to me that we do need to broaden our knowledge of marine ecology, the life cycle of various marine animals and organisms, and the cause and effect of various environmental changes. In some of these fields I suspect that we do not know enough to provide proper management procedures. For instance, I understand that the spanish mackeral was the most prominent species of fish in Chesapeake Bay in the latter part of the 19th century. Later on this was gradually supplanted by the croaker, and today I understand that it is the spot. In 1929, eel grass which covered large areas of the Chesapeake Bay began to die out and disappear. Today, I understand it is beginning to reappear. Within recent years we have witnessed the tremendous destruction wrought on the oyster industry by the MSX infestation. We also witnessed wide fluctuations in our Chesapeake Bay crab population, which I have been told is not related to fishery effort. It appears to me that further research effort is needed in all of these areas before we can devise proper management techniques or be in a position to determine beforehand the effect of proposed changes in environmental conditions.

In managing our estuaries it is imperative that navigation channels be maintained and/or modified and that additional channels be provided when careful consideration of all factors involved shows that such channels are warranted. To this end, the Corps of Engineers endorses a program of estuarine management by the state and/or federal government which maintains a wise and proper balance between development and conservation.

In furtherance of this position, the Corps has established as one of its research objectives the determination and establishment of guidelines and criteria for evaluating the effects of construction and operation of

Corps facilities and improvements upon nationally important economic, recreational, and aesthetic resources of estuaries. The biological productivity of coastal waters of the United States for fish and wildlife is dependent in large part upon the estuaries and adjacent aquatic sites as nursery and feeding grounds. This transition zone between the land and the sea is sustained in a productive pattern by runoff from the land and intermittent encroachment by the sea. The construction of engineering works that affect the fresh water discharges from the land or interfere with established marine environments may have substantial effects upon the resources of the area, some beneficial and others detrimental. Inland reservoirs and canalization for flood control, floodway construction and operation, navigation harbor and channel dredging and spoil disposal, hurricane barriers, salinity barriers, and beach and inlet improvements all have a bearing upon the environment in coastal waters. These effects are obscure and may have opposite short-range and long-range effects. The objectives of the corps is to progressively clarify the effects of the civil works program in this area and to determine requirements for protection and improvements of the environment and its resources. The limited nature of the estuarine environment and the rapidity of encroachment by economic development in these waters by both public and private interests make it imperative that measures be taken promptly to prevent despoilment of these national resources.

Thank you again for the opportunity to present the views of the Norfolk and Baltimore Districts at this meeting.

HARGIS: Thank you Colonel Adams . I wonder if the panel would have any questions or comments to ask the Colonel at this time? I would like to comment here Colonel Adams in working with the Corps we have on some of these problems, we have enjoyed a very good relationship. I hope it will be possible for us to persuade your superiors in the Congress to put up money for the Chesapeake Bay model which some of us regard as a major tool of estuarine management of considerable importance. Having taken one of the prerogatives of a temporary chairman and interjected my own opinion I would like to at this time ask Honorable Walter B. Fidler if he would come and give us the benefit of some of his thoughts. Delegate Fidler was Chairman of the Marine Resource Study Commission of which Delegate Bagley spoke and he is along with Delegate Bagley a member of the Committee on Chesapeake as tributaries of the House of Delegates. Both are highly interested in estuarine problems.

WALTER B. FIDLER: Dr. Hargis, members of the panel, ladies and gentlemen, these are very rough notes I have made here and they are a little on the blunt side and jerky, but they are not designed to be offensive. They are designed to graphically call our attention to some of the problems that we have without in every instance being able to suggest a solution. Virginia for a number of years now has through activities of its water control board done a very good job in reducing existing sources of pollution and minimizing additional pollution sources through it's certification program, at very, very little expense to the taxpayers of the state. In the meantime however pollution pressures from all directions have become a great deal heavy. Industries have expanded and new ones have located on the same streams. Populations of urban centers have increased many folds and sewage handling and treating systems have simply not kept pace with this peak in growth. Boating, swimming and other recreational uses of our streams have increased beyond our fondest projections. During these same years the type of pollution have become more sophisticated and the ability of the State to detect and to find them and their effect on our estuaries again has not kept pace. During the past fifteen or twenty years we have seen an unprecedented development and use of what I call the generalized pollutors, namely insecticides, herbicides, and pesticides with very little knowledge of their total impact on the estuarine environment. In recent years much of this stepped up man made activity has also resulted in some major physical changes in the estuarine areas. Dredging, filling and draining of marsh and wetland areas have increased at an unprecedented pace. Probably the greatest single desecrator of our wetlands is the federal government itself and especially through the activities of the U. S. Army Corps of Engineers. They have long used our wetlands as their major areas for the deposit of spoils from their dredging operations. They are still doing so today. Many of you remember recently the sort of drawn out controversy we had over dredging the James River. One of the most amusing paragraphs in the Corps of Engineers report to me on that dredging project was that they were going to use - I have forgotten now the number - but something like two or three thousand acres of unproductive marsh land as spoil areas and make it worthwhile land. Siltation along the coastal regions of the east coast has been the. sign of persistent destroyer of the usefulness of hundreds of miles of our once navigable waterways. The more intense and widespread the construction effort on our highland the more siltation problems we generate for our streams. In our own state often unwillingly our own department of highways through its activities is a major contributor. Water front erosion is one area in which we are just beginning to make some worthwhile strides. About three years ago an employee of Soil Conservation Service was assigned to my counties on the northern neck specifically to waterfront erosion work. This was a first in the nation and was achieved only after several years of determination by a few people in my own area who were so keenly aware of the need. The work in that area has been beneficial and has brought many good results, not the least of which is a public awareness that there is someone to go to - I'm taking about my area now for sound advice before spending one's own money on waterfront erosion control products.

To make the point more timely this past Monday and Tuesday literally thousands of tons of earth were washed into our estuaries and coastal waters along the Atlantic Coast as a result of the storm. This is a problem for all of us including the inland dweller as well and all of us should participate in its control. Incidently since last Monday and Tuesday I spent one afternoon looking at some of the waterfront control projects that individuals had put in in their area under the direction of this man I referred to a while ago, and they have held up remarkably well - remarkably well. The fact is I didn't see but one that suffered any material damage at all. Now I saw hundreds of others that did but the record up there and this is just a one man operation you must understand, has been very good, even in a severe storm. The public generally has become more keenly aware of the devastating dangers to the estuarine environment going out of petroleum handling installations then ever before in our history. This awareness has not come too soon. The problems related to it are complex. The solutions are not always readily apparent but one thing is certain, the estuarine areas have a greater stake in its proper management then we ever before imagined. On many scores we know a great deal more about the moon and outerspace then we know about our own continental shelf just off our shores. Research and education must be one of our main areas of thrust. Work in marine science and oceanography must be expanded at a greatly stepped up pace. Hydraulic models of bays and tributaries are a most useful tool and should be funded more promptly. During the 1968 session and here I think Dick Bagley has mentioned some of these things and I suspect he has mentioned the ones I have here, during the 1968 session of the General Assembly of Virginia several constructive steps were taken which may turn out as far as Virginia is concerned to be landmarks of progress on the State level in these areas we are concerned with today. (1) we funded a two year budget for the State Water Control Board which was almost exactly double the preceding two year budget. (2) we gave the Water Control Board specific authority control by regulation to discharge of sewage and other waste from boats and vessels on all waters of the State including the authority to prescribe types of equipment that can be used to make it uniform along the Atlantic Coast. (3) we gave the State Health Department specific authority over sewage and waste disposal facilities at marinas and other places where boats congregate so that minimum requirements will be related to the number of boats and people to be accommodated. (4) We have adapted a new criminal statute - statewide application prohibiting the throwing or casting and this may come as a shock to some of you, we didn't have a State law that was adaptable all across the state prohibiting the throwing of trash, garbage, or debris of any kind in the waters of Virginia. We adopted such a Statewide statute for the first time. (5) We directed Virginia Institute of Marine Science and funded the program by the way, to make a study of all marshes and wetlands in Virginia and to assess their relative importance to the marine resources in the State. I don't know how we are going to make out with that study and this is no time to be asking Dr. Hargis but to me that is one of the most important things we did because one of the problems in Virginia and I suspect it is applicable in other states is while we knew we had vast areas of marshes and we knew from a surveying standpoint where they were, we also know that marshes are not/of uniform value to the estuarine environment and there are many marshes that are much more valuable than many other marshes. Now what we are trying to drive at here in Virginia is to learn which of the marshes are most important and must be preserved under nearly all circumstances. Now we will need that knowledge before we can take any further steps in doing something about it. Before making several suggestions of our own as to some concrete steps that might be taken to cope with some of the problems allow me to make several observations. First, municipal and industrial pollution has been allowed to grow out of all proportions in this country. Second, a more determined and sustained effort must be made on both the federal and state level to ever curb it. Third, starting from where we are the direct parts from whatever source they come is simply staggered. Fourth, reckless, irrational enforcement edicts can cause self defeating economic chaos. Fifth, on the other hand we face irreparable damage to the estuarine environment unless a gigantic effort is undertaken and make no mistake about it our population centers and our industries will drag their feet if permitted to do so. We must make this turn in the road and exert every reasonable pressure available to us.

Now another observation by way of caution. There are too many studies, agencies, boards and commissions addressing themselves to the estuarine problem and I'm not referring specifically to the federal government any more than I am to the state. We are not now getting proper coordination and there is still excessive overlapping. It is also an area that lends itself to make work approaches and a vast amount of both public and private funds will be wasted if we aren't careful. There are some projects going forward today that are frightening, unrelated to prior work in the field and in some instances are being carried on by private corporations organized solely for the purpose of taking advantage of public grants, in areas in which they had no particular qualifications, experience or expertise whatever. I may divert just a moment there, a year or so ago I had an experience with one of these newly formed corporations operating on the federal grant. I never did spend as disgusting day or two in my life as I spent with them. Their sole ambition was to get this useless report in on time in order to meet the requirements to get the first and second payments on the grant. They didn't know anything about what they were doing and I wasn't in a position to help them. Now here follows several suggestions. (1) Waterfront erosion engineers should be trained and assigned to the coastal region as rapidly as funds permit. (2) Incentive matching funds should be made available to private waterfront property owners. I'm not talking about public waterfront owners now, I'm talking about private, whether individual or corporations or whoever it is, for waterfront erosion control projects when performed on prior approved plans, either state or federal funds could be used and the ratio to private investment does not need to be large in my opinion to reach the desired result. (3) Water pollution control should continue to be actually administered on state level. At the state level they know or will know in future years the problem better and will know the capability for correction better in a given locality. In addition to that they are more efficient. (4) The hydraulic model of Chesapeake Bay should be constructed as promptly as possible. (5) Valuable marshes and wetlands should be forthwith declared off limits to all federal and state agencies for use as spoil areas no matter who owns or offers them for such purpose and no matter how inconvenient the alternative is and the only way I know that can be accomplished is by congressional acts but it ought to be done. More funds are needed on both the state and federal level for acquisition of fee simple or easement interest in our still productive wetlands.

(7) The U.S. in recent years has dropped from second to sixth place as a producer of fishery products in the world. At a time when all predictions are that protein from the sea must be available in large quantities before the end of this century to feed the world population. The most important need now which is well within reach is the need for government guaranteed long term reasonable interest rate loans to the fishery industry. Conventional financial sources are simply becoming more and more unfamiliar with the fishery industry and would much prefer to make a loan to a completely new organized electronics firm then to assist in a field that holds so little glamour. Now the financial lending institutions in this country were more familiar with the fishery industry in 1910 and 1920 then they are today. And that is one of the difficulties that the fishery - I'm talking about all phases, shrimp, the whole works, fishery industry in this country is faced with. We have higher labor

costs in this country then in most other places in the world. We do not have the benefits of protected tariffs which most other countries do, on their profits. And we are in a terrible situation in this country as far as the decline in fishery activities in the nation. Now there are a number of things we could do, we could build an agricultural route, and maybe it is justified in demanding but the step I am indicating here is a relatively minor one and a relatively inexpensive one for this nation to undertake and that is either direct loans or government guaranteed loans. To me it is comparable to the Rural Education Administration in the late 1930's. If need exists that is the only way it can be done. Most of the fishery operations in this country are having to operate on very short term loans at very high interest rates and the matter is coming to a head rather drastically by the way, and that's one step in my judgment that the national government can do to help the - advance the fishery industry in this country. We are going behind head over heels. This is the last one. Research in marine science and oceanography is in trouble in this country. Despite all the hook law we have heard in recent years, budget cuts in nondefense science budgets have been drastic and we simply are not making the strides in these areas that we are led to believe. The only purpose in mentioning that is that I know if you have read some of the things I read in the last two or three years you are bound to have gained the impression that we are doing more in this country then maybe most other countries in the world in the field of oceanography and marine science research. Ladies and gentlemen what I'm trying to say to you is that all that reads well and all of it sounds good but the truth of the matter is we are not and these recent budget cuts which we had to make in our federal establishment, these cuts have fallen heaviest on the non-defense size fee including the ones we are so much interested in. I'm not criticizing the budget cuts. I think in many instances - for many reasons we have had to do it but I just want you to know that things are not as rosy as they appear to be in this field and right today we are not making the stride that we ought to be making if we are thinking in terms of future usefulness and productive usefulness of these estuarine areas. Thank you.

HARGIS: Does any member of the panel have any comments or questions? I thank you Mr. Fidler. I'll turn the podium over to Mr. Gardner.

GARDNER: I think we all found that to be a very fine and interesting presentation. All of the recommendation bear extreme consideration. I call upon Mrs. June Pearson for our next statement.

JUNE PEARSON: I'm June Pearson and I'm Secretary of the York County Property Owners Protective Association, Inc. and I'm also Chairman of its Anti-Pollution Committee, First of all let me say it is a pleasure to be here today. I'm most appreciative of the opportunity to appear at this meeting. As Secretary of the Property Owners Association and as Chairman of its Anti-Pollution Committee, I have for many years been a conscientious, and I guess you might say persistent pursuer of clean waters for the State of Virginia. The chief endeavors of our Association have been in the anti-pollution realm, particularly as regards the rivers and streams in our area.

As we all know, there are many problems in connection with estuarine resources and uses. Perhaps the most common is the dumping of sewerage and sewerage effluents into the streams. Our Association during the past several years has strongly advocated the dumping of such effluents out into deep water where they can be adequately and properly diluted and not, as so many developers suggest, at the very ends of these streams and creeks where there is very little or in many instances no water action.

One of the main drawbacks to any sewerage discharge into the streams is the so-called "buffer zone" which is placed around the area of discharge. This of course restricts the shellfish activity in such areas and is a necessary health safety precaution. However, from year to year more and more areas are restricted with buffer zones and the watermen are deprived of more and more working areas. Although we realize that such buffer zones are necessary, we would suggest that more consideration be given to avoiding the more prominent shellfish bearing areas when choosing a site for the dumping of sewerage effluent. In some instances in the past this has not been done, and we note in particular the discharge site for the James River sewerage plant which requires a large buffer zone around a sizable area of the best shellfish producing grounds. We also feel that the recent requirement by the Federal Government to have the localities alter their present central sewerage systems so as to include secondary treatment before discharging the effluent into the streams, is an important pregressive step. We realize this is a costly undertaking, but is necessary if we are to clean up the polluted areas of our rivers and streams and achieve and maintain clean waters for our State. This in turn should help to eliminate some of the buffer zones. I know I'm not going to be very popular right now with Mr. Miller of HRSDC as I recall what he had to say about the secondary treatment business.

We are particularly interested in the water quality standards which have been adopted by the State Water Control Board. Representatives from our Association attended and participated in several of the public hearings with relation to the criteria standards. We strongly urged at that time that the standards be set high enough to allow the present uses of the waters including shell fishing, regular fishing, swimming, boating and all other recreational activities. It is our understanding that the Standards for the State of Virginia have not yet been approved by the Federal Water Pollution Control Administration, and we sincerely hope that when they are approved they will be stringent enough to hold the line against further pollution of our rivers and streams. We realized while attending the criteria standards hearings that there is much pressure applied to the individuals representing the State and Federal agencies involved, one of the main sources of this pressure being contributed by industry. This does not mean that all industry is uncooperative in the anti-pollution effort, but there is a tendency on the part of some industrialists to resist necessary changes as regards improving quality of effluent being discharged, especially when it entails expenditure of a substantial amount of money to improve or install the necessary waste disposal systems. We suggest that this be one of the areas of strong endeavor and enforcement, since industry does contribute a great amount of waste materials to the waters and this source of waste contribution will of course increase enormously as communities grow and develop.

In addition, as we all know, there is much pollution in various sections of the Hampton Roads area, and in several of our rivers. For instance, just offshore from the Chamberlin are some of the most bountiful shellfish producing grounds but they can only be worked a small portion of the year and the shellfish must be transplanted to clean waters, which of course is time consuming and costly on the part of the watermen. These are the types of pollution problems which must be alleviated and we sincerely hope that the water quality standards are stringent enough to resolve some of these problems so as to restore the purity of these polluted areas.

An ever growing problem in our rivers and streams today is the extensive use of marinas. This is becoming a way of life and with it comes all the messy wastes and trash problems associated with people. As we all recognize, the existing laws as regards marinas and dumping are not very stringent, and even if we had stronger laws, there would not be enough available personnel to police these areas and enforce the laws. The result can be summed up in one word -- "Pollution". It is our understanding that the State Water Control Board is studying this waste and trash problem and is currently developing proposed regulations for boat wastes. We would suggest that they expedite these efforts so as to be able to give some relief to this problem. In the meantime, perhaps what we really need is a "don't be a litterbug" campaign as regards boaters. This of course won't resolve the problem completely, but this approach has greatly helped with relation to automobile litterbugs, and could possibly start the boating public thinking along that line.

We are very disturbed regarding the discharge of sewerage from the many boats coming into the marinas, and we are at the present time quite distressed regarding the proposal for the development of Goodwin Island by the Mobjack Bay Development Corporation which includes a 1200 boat marina in that immediate area. We strongly feel that for any Agency to allow such a large marina at one location in the York River is poor judgment and we doubt that such a marina when in use would meet the water quality standards set up for that particular area. It is conceivable that approval by a State agency of such an enormous marina would further breach the desired goal of mutual agreement regarding the State Water Quality Standards now being sought by the State Water Control Board and the Federal Water Pollution Control Administration. Regarding dredging and filling, we are concerned since it not only destroys the shellfish, but such disruption of the marshlands and river bottom destroys the marine and wildlife. More thought should be given by the responsible agencies to the preservation of the marine and wildlife in the few remaining areas in which they now exist, and Goodwin Island is one of these areas.

With relation to our local governmental body in York County, we feel that the members of the Board of Supervisors should actively participate whenever possible in determing the best possible methods of sewerage disposal in our County. During the last session of the legislature we requested that our Delegate introduce a bill which would give the local governmental body final say regarding approval or disapproval of interim sewerage systems in the County. This law (15.1-327.1) will apply to any County having a master sewerage plan. We feel such decisions with relation to interim sewerage systems should rest with the local governmental body and not a State Agency, since the local representatives are in a position to better understand the needs and desires of the people of the community. Of course, the State Water Control Board still continues to determine what can or cannot go into the streams.

In view of the extra demands upon some of the Agencies as a result of State water quality standards, and other legislation which will undoubtedly be forthcoming as regards waters, wastes, marinas, pollution, etc., we suggest that these respective agencies start to request increased allocations in their budgets to cover the cost of hiring additional personnel to enforce the Water Quality Standards and associated laws. After all is said and done, laws are ineffective if there are insufficient people available to enforce them.

In closing, I want to say that even though we are critical in many areas as regards the Agencies and the water pollution problems, we do not lose sight of the fact that these Agencies do perform a very important and effective function, without which it would be an impossible situation. Our organization desires to cooperate and assist in any possible way in maintaining clean, unpolluted waters in the State of Virginia. Thank you very much.

GARDNER: Do members of the panel have any questions? For our next statement I call on Mr. C. W. Wiley of the Virginia State Department of Health.

CLOYDE W. WILEY: Thank you Mr. Chairman and members of the panel, ladies and gentlemen. Virginia State Health Department is very appreciative for this opportunity to make a statement before this hearing primarily regarding the State shellfish control program and shellfish industry.

Virginia is vitally concerned with the prevention, control, and abatement of pollution to its estuarine areas. The preservation of the State's priceless water resources is of critical importance to the social and exonomic progress of all its citizens. Traditionally, Virginia's growth and development has been associated with its rivers and estuaries. It is well recognized that these resources hold a vast potential for the future, and every effort must be made to assure their preservation.

Many sections of Virginia are rapidly shifting from a rural to an urban status. Problems associated with this change are demanding widespread attention. The pressures of population expansion are manifested in many forms such as the industrial and residential development of estuaries and wetlands, the construction of waste treatment facilities, and a vast increase in the number of boats and marinas.

It must be stated, however, that enormous strides in pollution control have also been achieved within the State during the past few years. Better planning and attention to water pollution control problems has resulted in a shift in emphasis from abatement to prevention of pollution. This has resulted in a closer supervision of all types of waste disposal operations. Consequently, the water quality of many streams has been substantially improved.

Virginia has long been recognized as a leading producer of quality shellfish and other seafoods. The shellfish industry is a major contributor to the economic welfare of Tidewater Virginia and has been able to survive primarily because of the predominately rural nature of the area and its rich endowment of relatively unpolluted growing waters. Even with the ravages of the oyster disease MSX, the State harvested approximately two million bushels of seed and marketable oysters during the 1967-68 season. Virginia is also the third largest producer of hard clams in the United States.

The abundant wealth of this natural resource has until recently been taken for granted. Presently, however, the dangers of encroaching pollution to this and other aspects of our economy associated with estuarine areas is being given serious attention at all levels of the State Government. It is recognized that pollution must be controlled if Virginia is to realize the potential of its vast water resources. Efforts are being made as never before to study, control, and eliminate pollution to Virginia's waters, but much more will be required to meet the challenge.

Virginia presently has 55 areas comprising approximately 63,442 acres restricted for the direct marketing of shellfish. While this is a fairly large figure, it represents only a small portion of the available shellfish growing area within the State. It is anticipated through our modern technology of pollution control, condemnation of presently approved shellfish growing areas can be held to a minimum, and hopefully some of those areas now restricted can be reclaimed.

The complexity of the problem of protecting shellfish growing waters from the encroaching hazards of environmental pollution is a mammoth undertaking requiring the constant effort and cooperation of many agencies. The Federal Government must recognize its own responsibilities towards abating water pollution. Fourteen of Virginia's presently restricted shellfish areas comprising approximately 47,465 acres are influenced to varying degrees by installations or facilities of the United States Government over which the State has no control. This represents 75% of the total acres within the State condemned for the direct marketing of shellfish.

The shellfish industry is fully aware that pollution is the major problem facing it today. We have entered a new and more complicated period in our shellfish and pollution control efforts. However, precise definitions of water quality criteria are being formulated and through determined efforts the water quality needs of the shellfish program will receive proper recognition.

GARDNER: Do members of the panel have any questions of Mr. Wiley? Thank you Mr. Wiley. For our next statement I call upon Mr. Franklin P. McGinnes, of Virginia Seafoods, Incorporated of Irvington, Virginia.

FRANKLIN P. MCGINNES: Mr. Chairman, Participants, ladies and gentlemen, I am Frank McGinnes, of Virginia Seafoods, Inc. and I am also a Director of our national trade association, The Oyster Institute of North America.

Virginia has been famous as a producer of seafood since pre-colonial days. In the thirties and forties, the total marine harvest averaged around 250 million of pounds per year. In 1945, the total harvest of 304 millions of pounds was valued at approximately 30 million dollars, of this, over 18 million pounds was oyster and clam meats, valued at 7 million dollars. In the mid 50's the art of shellfish farming had advanced to the degree that we were harvesting 22 millions of pounds of oyster meat per year.

The production of our formerly rich oyster harvests was sharply curtailed ten years ago when the MSX parasite decimated the oyster crops.

Last year we produced 9 million pounds of oyster meat by virtue of practicing every oyster farming technique known. MSX is still around and because it has a salinity barrier of approximately 13 parts per thousand, our oyster crops must be grown in what would formerly be marginal territory. The large estuaries of Virginia are too salty for oysters to be produced because they do not survive the third year with the persistent incidence of MSX. Thus we must grow oysters outside the MSX areas although with the help of the Virginia Institute of Marine Science we hope to be able to develop methods to grow oysters in the MSX areas. Hard clams do thrive in the saltier water. Vast areas in the James are not used for the harvest of Clams because of the bacterial quality of the water.

This discourse brings us to the importance of my testifying at this conference today. Since our most valuable species, the oyster, cannot be grown in the saltier waters, we must cultivate it in the brackish areas. These are the ones most vulnerable to domestic pollution. This means that we in the oyster industry are caught in a vise, MSX from the bay coming up the rivers, and pollution coming down the rivers, causing more shellfish producing areas to be closed. This cannot continue - not only for the sake of our industry but for the welfare of every citizen of Virginia. Thus it is imperative that the Water Resource Board and the Shellfish Branch of the State Health Department work together with increased effectiveness to restore areas now closed as well as keep the waters of our presently producing areas at acceptable quality levels. Clean water is essential for maximum beneficial uses. The economic, recreational and aesthetic values of our waters are crucial to the future of Virginia. I would suggest increased attention to pollution abatement of the York River which has had a long history of tragic oil spills and domestic sewage hazards and to the James River.

Since MSX has imposed limits on the oyster industry in this state, vast interest has turned to clams. The James River is the best source of supply of clams in our state but due to pollution all taken from this area must be re-layed, so they can cleanse themselves, therefore it is economically prohibitive to gather these clams. Should the water quality of this area be brought up to acceptable standards for shellfish harvesting, this area would produce enough clams to put our state among the top three clam producing states on the Atlantic Coast.

At this time Virginia is the only state of the twenty-three (23) maritime states whose standards of water quality have not been approved by the Federal Government. Realizing that pollution abatement is a slow process, plant by plant and city by city, I hope that the state standards can be revised so that we can get Federal approval in the very near future.

Other states are managing to open shellfishing areas long closed. We urge and insist that our state officials get the help they need to do likewise. We cannot afford the luxury of isolation. If we need grants and technological assistance, only available from the Federal Government, by all means let us take advantage of such help. Other states insist on getting their share of the tax dollar. Why not Virginia? We will be more grateful to our state officials when we are reclaiming more shellfish harvesting areas than are being closed. Thank you.

GARDNER: Are there any questions from the panel?

DAVIS: I would like to make just one comment, as our spectator didn't give an entire presentation I would just like to say that the reason that our water problem standards has not been approved is not due to the standards themselves but due to the question of secondary treatment. We hope this can be resolved on a staff level which we will discuss with the Board at its next meeting.

GARDNER: I call upon now Mr. S. Mason Carbough representing the Virginia Department of Agriculture and Commerce.

S. MASON CARBOUGH: Thank you Mr. Gardner, members of the panel, ladies and gentlemen. I am S. Mason Carbough, Executive Assistant to the Commissioner of the Virginia Department of Agriculture and Commerce and I'm representing him today and will present to - at this hearing a statement by the Commissioner.

Mr. Chairman, I appreciate the invitation to present a statement to you at this hearing concerning the comprehensive study of the Nation's estuarine areas and particularly the estuaries and coastal waters in Virginia.

First, let me reaffirm that the industry of agriculture has an abiding interest in providing an abundant supply of clean water, and protecting all our natural resources for not only agriculture, but for the public at large.

Pollution problems are just as critical for the people in the industry of agriculture as for anyone else. Agriculture needs "clean" water for the crops and animals and, therefore, has a direct interest in assuring an adequate quantity and quality of water resources is available to all.

It occurs to me that the agriculture land and the estuarine land in Virginia have a relationship whereby neither is in direct competition with the other for the alternative uses.

Although it is fair to say, I believe that the practices, activities, and plans concerning agricultural land use and estuarine land use do affect each other.

By virtue of the fact that extensive agriculture production does take place adjacent to marshlands, wetlands, the streams in the estuarine areas, and the coastal waters, the industry of agriculture does have a direct interest in the subject of this hearing.

If you draw an imaginary line from Fredericksburg to Emporia, the area east of that line produces roughly one-third of the total income from farming in Virginia.

The total dollar value of agricultural production including farm forest approaches $175 million. The returns from commercial forest would make this total even higher.

More specifically, to give you some idea of the impact of this area on Virginia's agricultural economy, it produces of the state's total: about 80 % of the corn sold for cash; almost 95% of the soybeans; practially all of the peanuts; over 90% of the cash vegetable crop; approximately 40% of the hogs, and one-fifth of the livestock.

The production represents only a beginning of the economic impact. The supply and service sector employs many people in such businesses as banking, transportation, food processing, chemical manufacturing, feed and fertilizer manufacturing, machinery dealers, and many others. The marketing and processing sector employs many more.

The farm production statistics have been compiled on a county basis and we would be pleased to furnish you these data sheets for the counties in Virginia's estuarine area, if you would give us the names of the counties involved.

Beyond the estuarine land area, I believe the solution, to estuarine pollution so far as agricultural production is concerned, lies in the continued implementation of soil conservation practices which prevent soil erosion and land runoff. The soil and water conservation programs, such as small upstream watershed dams, have helped in the past to reduce siltation, much of which when it occurs probably finds its way into the estuarine areas, and can be particularly helpful if properly supported and financed. Similar and as effective results have come from the use of sound soil and water conservation practices by individual farmers both within the estuarine area and the inland drainage areas. Adequate public encouragement for the implementation of the numerous practices needs to be continued.

Fertilizers and pesticides have been mentioned by some people as contributors to pollution. You are well aware, I am sure, of the part which agricultural chemicals play in providing this nation with food and fiber. We are today a better fed people at less cost than any people in the world and a large measure of the credit for this success must go to fertilizer and other agricultural chemicals.

Confusion seems to exist as to the extent of pollution caused by the use of agricultural chemicals by farmers. There are many variables to this complex question, and I would encourage you to consider thoughtfully the questions which arise on this subject and to seek out the facts.

In recent years economic pressures and regulatory programs have exerted greater pressures for safe practices than is likely to be brought about by pollution control programs. Farmers are not likely to use more fertilizer or other chemicals than are economically justifiable, nor are they likely to intentionally use chemicals that will contaminate their products. Continued surveillance and monitoring inspection programs are an integral part of pollution prevention and these are carried on daily by the Department of Agriculture and Commerce, and by several federal agencies. There is a need for more research considering the many variables which will reveal more concrete evidence as to the extent of pollution in land runoff caused by agricultural production practices.

In the estuarine area are located our fine seaport facilities. Through these facilities come the imports from many countries. Unfortunately this commerce brings with it the danger of the introduction into the state of some new destructive pest, either insect or disease.

The USDA keeps close surveillance on the movement of vessels and goods, and has been quite effective in keeping harmful pests from our shores. But occasionally some pest does get through the best of inspection systems. When this happens, immediate steps must be taken to contain and control it within the area of introduction.

Control measures often involve the use of chemicals and it is important that you provide flexibility in your management programs to protect our economy and health.

A new destructive pest not only poses a threat of serious direct economic losses to the industry of agriculture, but also affects the movement of goods in and out of the area, if it becomes quarantined. We have the extra burden of protecting the inland states and keeping open the channels of trade.

On another matter, I ask that where livestock and poultry feedlots, and food processing plants occur within the estuarine area, that these operations be handled on an individual basis insofar as they relate to estuarine pollution problems.

I recognize the desirability of preserving our estuarine resources, and encourage the development of a program to effect the coordination of all interest in the estuarine areas.

I would urge in any attempt to regulate the land in the estuarine area, that proper consideration be given to agricultural production and to the production practices which are desirable and necessary in supplying our people with food and fiber. It would be helpful to have an opportunity to further contribute to your planning in the estuarine area of Virginia before any final plans are developed by having information affecting the industry of agriculture available to us.

Thank you for the opportunity to present to you some of our concerns which we feel relate to the estuarine and coastal areas of Virginia. Maurice B. Rowe, Commissioner of Agriculture.

GARDNER: We can put Mr. Carbaugh on the spot since he read a presentation prepared by someone else. Do we have a question?

CARBAUGH: If I don't have the answer I will get it.

GARDNER: I had an indication from Mr. James Coates of Norfolk that he would like to describe some of the pollution that he has seen first hand within Elizabeth River.

JAMES COATES: I appreciate the opportunity to speak to you and without any preparation and I, perhaps am the only amateur in the room among a panel of experts and I do appreciate this opportunity. I would like to mention to you I think most of you know the effects of building a "J" and what he has when it is built at right angles to the shoreline. In certain areas because of prevailing winds and tides the sand or sod material will build up on the side of a "J", sometimes as in the case of Willoughby Beach you have it built up on both sides and we restore the beach. Some years ago I met with the army engineers because I live on waterfront and I asked them for permission to build and obtained permission to build two "J". They stuck out at right angles to the shore line 40 feet and the result was that on the north side because of prevailing tides and winds, I accumulated a very fine sandy beach on which my children and my neighbors children could play. Today that beach is filled with garbage. On at least Saturday and Sunday it was filled with garbage. Today we have a northeast wind and flood tide and this morning there was no garbage on our beach. I don't know whether the Colonel gave permission to any authority to build a "J" but the result is this, that we have a "J" built now extending out in a westerly direction from about 38th Street which goes about as far out into our river as you go from here to Fort Wolfe. Now what happens when you build a "J" is that the topography changes, the underwater topography rises in proportion to the conditions that exist in that particular area and we don't have to be technicians from MIT or an expert to know these things. But it is a fact that you can do anything in the water and you will change to some extent - it might be minute but you do change some of the conditions. Now since we have been meeting and it is approximately 12 o'clock there have been at least fifty and perhaps sixty huge garbage dump trucks loaded with city garbage dumped into the river since we have been here this morning. Who gave them permission to do that? I might just as well take my garbage and walk down to the beach and dump it overboard and yet that's not legal for me to do it and yet there is a group that do it and they do it wholesale. I happen to live in the fortunate area where we have an incinerator and I'm only a mile from it or less than a mile from it and I must agree -

I'm a good friend of Mr. Miller's but you know having his own job down there if I get a southwest wind and particularly in the summertime I can accumulate a bucket full very easily. All I have to do is to walk down to the river and dip up a bucket full of black muck that stinks to high heaven and in fact I took a gallon jug of black muck which is accumulating with hydrogen sulfide as you have mentioned and all the debris, it is an accumulation of sewage and an accumulation of garbage and everything known to man which is contaminating the river and that's being done today right here. It is just four or five miles in this direction. It is an unhealthy condition. The stink from the garbage pile isn't so bad, the soot from the coal fields is not so bad but it is absolutely inexcusable to have an inadequate sewage disposal plant and we have an inadequate sewage disposal system. We can look out of my bedroom window and see a brown streak of water if today the conditions are adequate or proper. In the river there is a difference in the color of the water that emanates and widens as it fans out leaving the area from which the pipe empties its contents into the river.

Then the wind changes as we have this morning a refreshing breeze comes from a different direction, the water begins to clean up a little bit and we get the water from the channel. All of this summer it was too bad for any children to get into the river. It was even too bad for dogs to chase a stick out into the river, anywhere from 100 feet out. Now if you go into the main channel and take samples that is not so bad but anywhere in close you get a very contaminated condition that either stinks so much that it is almost unlivable and it is getting worse.

I love home and motherhood and flowers and clean water and everybody does but what are we going to do about it. We don't control the authorities who are the great offenders. We went through the motions and bless your heart I think we are making progress but we are making progress too slowly. Now I don't own a share of stock in any food processing. I don't own any rights to oyster banks or oyster beds. I have no interest whatever in being here except as a citizen who objects to the stink and the conditions we are forced to live in and it cost me almost $600 worth of taxes on my homesite each year in the city in which I live. So I'm not gripping about paying the taxes but I do gripe about the odor and stink. I'm too old to ski and I don't swim too much any more and I don't have a pleasure boat but I do like to live and cut my grass and have a decent place to live in and looking at it from a purely practical standpoint we have an intolerable condition over on the other side of the river. I thank you for the opportunity to sound off and tell you about this. I know we all are starting to correct those bad conditions and I hope the army engineers will revoke their permit to build this big "J". It sticks out almost a mile from the mainland over there and they are actually dumping garbage in the river this morning, since we have been here and I invite you to go over and look at it but take a clothespin.

PAESSLER: Mr. Coates with reference to the garbage that's going in, is this the amount that you described - is this the equivalent that is being dumped in from ships or is this actually being dumped in from trucks?

COATES: From trucks not ships.

GARDNER: Any further questions?

DAVIS: I would like to know if he could tell us where it is coming from?

COATES: I don't want to get in trouble. I invite you to go to see it. I can't fight city hall and I have no mind to and the city health officials are interested in the problem, whether they will actually take any action to do anything about it or not I don't really know. I'm not exaggerating. I invite you to come and see it. I will be glad to answer questions - are there any other questions?

PAESLER: We would like to have more facts. Perhaps you would be glad to discuss this with us some other time in private.

ANDERSON: Mr. Coates I have one question. Can you tell us where this "J" is located you are speaking of?

COATES: I use the term "J" because a "J" is a "J" whether it be made of concrete pine or plank or whatever it is or whether it is made of concrete or whether it is made of garbage with a little bit of dirt mixed in with it and mashed tin cans and all that. A "J" is speaking from an engineering standpoint is a structure which produces a change in the contour in the bottom of the river by blocking the flow of tide. Now the further out a "J" sticks from shore the more dirt area it has behind it on either side of that "J" because the tide has to go around it and the effect is that the water accumulates and swirls behind the

"J" and bric or brac or whatever you want to call it will accumulate along with this material - sand material behind the "J". Now it makes no difference what a "J" is constructed of, whether it is crushed rock, whether it is rock that you have that builds a petition or builds a wall around the islands out here on the Potomac or runs out here in the middle of Chesapeake Bay, they are all a form of retaining material and a "J" is that. It can be garbage if it is wide enough and this is what this one is - garbage.

ANDERSON: What is it's location?

COATES: Well it is parallel to Pier 6 and North and Western Coal Piers, it is approximately - it begins at 39th Street in the City of Norfolk and there I go getting in trouble and it extends over to about 43rd Street and if it keeps on it will be in my back yard in about four more years, which is up around 53rd Street.

ANDERSON: Is it Elizabeth River?

COATES: Yes Elizabeth River and it is opposite Crane Island. Incidentally I didn't want to interrupt the Colonel and as I stayed here a little bit longer I became a little bit more at home this morning, did the Army Engineers give anybody permission to use the river as a dumping - as a garbage dumping area? I would like to know that and I'm not trying to put anybody else on the spot but certainly someone must have obtained permission if we have an authority whether it be federal or state or county or our legislators, but somebody had to give someone permission to use our waters as a garbage dump.

GARDNER: Mr. Coates I think I can answer that. It would be against the 1899 Refuge Act to dump garbage debris and a number of other things into navigable waters and I'm sure these are considered navigable waters.

COATES: Well they used to be. Now they are so shallow only row boats can go in there.

GARDNER: I know that all of us are getting a wee bit hungry at this point but we only have a few more to go. In fact what I have left are maybes, unless some of the panel cares to make statements as we close. I have a maybe here from Mr. J. L. Hamrick, Jr. Allied Chemical Corporation.

HAMRICK: I don't desire to make a statement.

GARDNER: The other from Mr. G. D. Monola, Norfolk Health Department.

MONOLA: With sympathy to the audience I do not wish to make a statement at this time.

GARDNER: Another maybe is Mrs. H. S. Keimlings.

KEIMLINGS: Not at this time.

GARDNER: I would like to point out as I have said earlier that the record will remain open and if you don't care to say anything at this time mail a statement to us and it will be included in the official minutes of the meeting. I also have a maybe from Mrs. Vaughan.

VAUGHAN: No statement at this time, but I do have one question. I have been concerned about the great oceanography and increase in the jellyfish in the bay and I'm wondering if the ocean geographic survey or anything like this is taking care of it.

HARGIS: We,too,are concerned as many other people with the - what has been alleged to be an increase in the jellyfish. No one really knows whether there has been an increase or if there have, what the proportions are because records from former times are non-existing. However this is obviously a very severe economic problem relating particularly to materials and recreational uses of the estuarine waters. Interest has developed so much that there is a federal jellyfish act and under the federal jellyfish act there is provision for money to investigate the problem to see whether control is possible. Among the principal agencies involved in the program is our institute. We have a study under way and the study is being enlarged. Interesting this is one of those area where the economy drive didn't hit very hard this time. As a matter of fact the appropriation went up instead of down.

GARDNER: Are there others here in the group that would like to make a statement at this time. Members of the panel would you like to make a statement. Members of the moderating team? I thank you all for the statements and your participation in the meeting and as I indicated earlier all will receive copies of the minutes once we get them through publication. Thank you very much.

ADDITIONAL STATEMENTS SUBMITTED FOR THE RECORD

113a

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P. O. Box 10026
Richmond, Virginia 23240

November 26, 1968

Mr. Eugene T. Jensen
Regional Director
Federal Water Pollution Control Administration
U. S. Department of the Interior
918 Emmet Street
Charlottesville, Virginia 22901

Dear Mr. Jensen:

This is in reference to the public meeting held at the Chamberlin Hotel, Fort Monroe, Virginia, on November 19. Because of a prior commitment, I was unable to attend this hearing.

We submit the attached Research Report 65, "The Virginia Tidal Riverbank Erosion Survey," and an article by W. A. Phillips and Frank D. Eastham published several years ago in the Journal of Soil and Water Conservation as information for the record. As the result of said report and the efforts of local Soil and Water Conservation Districts, county officials and other concerned local leaders in Virginia, this agency on November 1965 assigned an engineer as a consultant to local landowners in tidal riverbank stabilization. His services are in strong demand and results are encouraging. The efforts to date have been on an informal basis with individuals or very small groups and on areas of limited scope which do not involve an enormous capital outlay. A combination of engineering measures supported by vegetation is being fully explored.

We are convinced that tidal riverbank erosion is a serious problem in Virginia because of the loss of land, the resulting sediment and loss of valuable water front property.

Very truly yours,

Tom F. McGourin
State Conservationist

Attachment

cc: A. H. Paessler
W. J. Hargis, Jr.
M. M. Sutherland

By: W. A. Phillips
Area Conservationist
Area VA-A-3
Soil Conservation Service
Tappahannock, Virginia
and
Frank D. Eastham
Work Unit Conservationist
Warsaw, Virginia

RIVERBANK EROSION IN VIRGINIA

Tidewater Virginia has many bays, rivers, creeks and inlets that subject the land to serious erosion problems. This erosion is caused by the fluctuating tides, by wave action, by frost and floating ice, and by rainwater. Erosion is aggravated by winds and accompanying storms - especially when blowing from sea to land during abnormally high tides.

There are many records indicating that this problem is not a new one. Augustine Washington built a home in Westmoreland County and remarked that it would be 200 years before the Potomac would bother it. Two hundred years have about passed and the foundations are falling into the river. By the time of the Revolution the isthmus connecting Jamestown Island to the mainland had washed away. Prior to 1900, when a seawall was built, the first landing site and the site of the original fort had long since disappeared into the James. Across the river a state highway has recently fallen over the cliffs at Mogarts Beach.

Park Service excavations indicate that no less than 125 feet of the Yorktown surrender grounds have fallen into the York River. Thus many priceless historical landmarks have gone overboard, as at Jamestown. Wakefield and Stratford plantations, the birthplaces of Generals Washington and Lee, on the Potomac, are annually losing enormous quantities of timber and farmland.

Virginia, with a tidal shoreline more than 2,000 miles long, has no rocky shores or protecting marshes on much of this exposure. Maryland, with a similar shoreline, made a detailed study which indicated a loss of about 25,000 acres in 90 years - an annual loss of about 275 acres. One area, Bay Banks, lost 40 feet in one storm. This is not merely topsoil we are losing, it is complete, final, and utter loss.

Many places in Virginia lose 20 to 30 feet of soil in one storm. Some exposed areas have an annual loss of three to ten feet. Farms, orchards, homes and timberlands are being eaten away by the steady grind of the seas. Many Colonial cemeteries have been washed away. Augustine Washington's family graveyard is now but a dozen steps from the Potomac. The river is approaching at a rate of six feet annually.

Some cliffs along the Potomac rise 160 feet above the water. Waves undercut sections, causing landslides involving thousands of tons of earth and timber. The waves remove these slides and start undercutting again. Slides carry away fields, woods, homes and highways. People and animals have perished in riverbank cave-ins.

The James, York, Rappahannock, and Potomac Rivers present the major problems, but many other bodies of water have the problem in varying degrees.

The problem is serious. Millions of dollars have been spent in efforts to control the erosion of these shores - often to no avail. Many structures are poorly conceived, improperly built, or constructed of poor material.

Properly designed seawalls, jetties and bulkheads will do an effective job of control, but they are very expensive to construct and maintain. Some cost $100 per foot. Most landowners simply move back as the river moves in.

The Northern Neck Soil Conservation District supervisors have long sought an approach to the problem. In 1956 they decided to concentrate on developing some practical way to reduce the loss at minimum cost. While studying the problem and evaluating past efforts it was found that one farmer on the Rappahannock River, Mr. Fred Durham of Richmond County, had achieved very promising results with vegetation. The bank had been sloped and sodded to Bermuda grass and had the beach well established in a sod of native salt-tolerant marsh grass (Spartina patens). This had previously been a rapidly eroding shoreline, but after treatment the beach began gradually moving out into the river and the marsh grass has built a dense barrier 30 feet wide between the bank and the water. This bank has successfully weathered hurricanes for 15 years. Hurrican Hazel threw seas almost to the top of the bank with no ill effects. The grass barrier absorbed much of the shock and the remaining energy expended itself rolling up and down the sodded bank. Similar banks, with the same exposure, lost from eight to 20 feet in this one storm.

This project merited study. The Spartina patens was obtained on the farm and the only cost involved was lifting and planting. The bank was sloped 2:1 and seeded to a general lawn mixture. Bermuda grass has now taken over the site.

In 1957 the supervisors decided to try this method of control on other sites with different exposures. Five were selected, one on the Rappahannock, two on the Potomac, and two on a creek from Chesapeake Bay.

The topsoil was stockpiled and the banks were sloped as low as possible consistent with cost. A 3:1 slope was found to be very effective. The topsoil was then spread over the exposed ground and the area was heavily manured and fertilized. Kentucky 31 fescue was seeded to within 10 feet of the water; midland Bermuda grass was heavily sprigged from the fescue to within three feet of high water. Spartina patens was heavily sprigged from the midland Bermuda to the mid-tide mark. Spartina alterniflora was then planted in rows from here to low tide. In all cases mulching of the seedbed was important.

It was soon obvious that this was no simple job. The riverbanks are exposed to extreme cold in winter, freezing to a depth of 18 to 24 inches. In summer direct and reflected sunlight make them very hot, and the internal drainage and heat make them very hot. High tides and wind-blown spray make them alternately wet, dry, windy, cold, hot, and frequently whipped by wind-blown sand and salt water. Before the banks could be seeded heavy rains and windy seas had damaged them so severly that they all had to be reworked.

Sufficient midland Bermuda for the trial was obatined from the Beltsville, Maryland, Experiment Station. We also used native grasses that seemed to be doing well on similar sites to those on which we were working. Spartina patens, Spartina alterniflora, and needle rush have proved to be good ones.

We learned much from these projects. We know it is very important to give close maintenance for at least a year. Small washouts and gullies must be quickly repaired. Several applications of fertilizer are better than one heavy application. The heavy fertilization causes a tremendous stimulation of weeds and annual grasses. These must be cut at least once a month if a good sod is to be quickly formed.

We found that a stable beach is a prerequisite to sloping. If this cannot be done with grasses then the toe of the slope must be held with structures. Banks more than ten to twelve feet high are risky and treacherous to slope and seed. Here excessive washing, sluffing and sliding are likely to occur. Excess water from the land needs to be drawn off in tile lines. Sloping should be done with a dragline as it is difficult to use a bulldozer and get slopes without pushing loose dirt to the water's edge. Loose dirt here will be promptly washed away.

Sloping should be deferred until the toe of the slope has been stabilized with adapted grasses or structures. In Virginia the topsoil should be stockpiled and the sloping done in late winter in order to get the banks seeded early. Thus the grasses will have the longest possible growing season and will get well established before the fall hurricanes and winter storms.

All projects have come through the first year in surprisingly good condition. The District supervisors are well pleased with the results to date, and feel that we have found a practical approach to many of our erosion problems.

We do not think this system will work everywhere, but know that it holds considerable promise for landowners with eroding banks of fairly stable soils that are not exposed to wide stretches of open water.

City of Portsmouth
Virginia

Established 1752

. J. BERGERON
DIRECTOR OF PUBLIC WORKS

November 25, 1968

STATEMENT FOR THE RECORD
FWPCA MEETING ON ESTUARINE WATERS,
HAMPTON ROADS-CHESAPEAKE BAY AREAS,
CHAMBERLIN HOTEL, FORT MONROE, VA., NOV. 19, 1968

DEPARTMENT PUBLIC WORKS
CITY OF PORTSMOUTH, VIRGINIA 23704

From the viewpoint of a municipality, certain questions and observations directed toward protecting appropriate estuarine water uses, commensurate with the costs which may be involved. Some of the questions and observations we respectfully request to be given serious consideration, are briefly stated as follows:

1. A factual summary of the present conditions with reference to pollution, of the estuarine waters of the area should be presented to indicate what uses of the waters are impaired at the present time. The summary should differentiate between generalized and localized conditions.

2. The pollution parameters should be established and defined as accurately as possible. It seems unlikely, in the generalized Hampton Roads area, that oxygen deficiencies exist. It would not, therefore, seem helpful to the estuarine waters to reduce the oxygen demand of wastewater discharges. The nature and sources of pollutants which have the greatest detrimental effect upon the estuarine waters should be established before any generalized program for reduction of all pollution is adopted. Arbitrary increases in the degree of wastewaters may be achievable, but may have no measurable effect upon the general estuarine water quality. If this is the case, the expenditure of funds for arbitrary increases in the degree of treatment would not be prudent. Careful evaluation, therefore, is indicated.

3. Estimates of cost for the protection of the several possible uses of the estuarine waters should be made so that the merits of the protection of a possible use may be evaluated on economic bases.

We trust that the above comments may be of help to you in making a decision.

FJB/gj

Mr. Eugene T. Jensen
Regional Director
Federal Water Pollution Control Administration

Mr. A. H. Paessler
Executive Secretary
Virginia State Water Control Board

Mr. William J. Hargis, Jr.
Director
Virginia Institute of Marine Science

Mr. Marvin M. Sutherland
Director
Virginia Department of Conservation
and Economic Development

Mr. A. P. Johnson, Jr.
City Manager
Portsmouth, Virginia

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OFFICE SERVICES SECTION
FWPCA

Hampton Roads Maritime Association
INCORPORATED
Established 1920
127-129 BANK STREET — NORFOLK, VIRGINIA 23510
TELEPHONE 622-2639 — AREA CODE 703

JACK W. MACE
EXECUTIVE SECRETARY

H. M. THOMPSON
CONSULTANT

November 20, 1968

Mr. Eugene T. Jensen, Regional Director
Middle Atlantic Region
Federal Water Pollution Control Administration
U. S. Department of the Interior
918 Emmet Street
Charlottesville, Virginia 22901

Dear Mr. Jensen:

In response to your letter of October 18th we wish to offer our following comments inasmuch as the Association could not be represented at your hearing at Fort Monroe, Virginia on November 19th.

The Hampton Roads Maritime Association, whose membership includes almost all businesses engaged in waterborne commerce in Hampton Roads, is very interested in water pollution control, control of dredging and filling, and the application of area-wide planning and/or zoning. While we do not have any specific statements to make at this time, please be advised that this Association will make every possible effort to cooperate in your comprehensive study of this area's estuarine resources.

The communities of Hampton Roads and the State of Virginia are blessed with beautiful and productive waterways and every effort by private and governmental interests should be made to preserve and develop this outstanding natural resource.

Sincerely yours,

JACK W. MACE
Executive Secretary

JWM/ca

COMMONWEALTH OF VIRGINIA
HOUSE OF DELEGATES
RICHMOND

CLIVE L. DUVAL, II
FAIRFAX COUNTY AND CITIES OF FAIRFAX
AND FALLS CHURCH
1214 BUCHANAN ST.
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COMMITTEE ASSIGNMENTS:
GENERAL LAWS
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November 18, 1968

Federal Water Pollution Control Administration
Middle Atlantic Region
918 Emmet Street
Charlottesville, Virginia 22901

Dear Sirs:

Since I live at McLean, Virginia, near the Potomac River, my principal experience has been with uses and problems of the estuary of what has been termed The Nation's River. However, some of the problems we have encountered in seeking to preserve scenic and conservation values of the Potomac are undoubtedly common to most, if not all, estuaries and estuarine zones.

Because a number of local jurisdictions and often several States may be involved in the control of estuarine areas, the most basic problem encountered is the need for--and methods of accomplishing--area and region-wide supervision of the typical estuary. For example, there must be uniformity in the planning and zoning controls over land adjacent to or affecting estuarine zones. Conflicts between private owners and local, state, and Federal interests render this essential objective extraordinarily difficult to accomplish.

The proposed Potomac River Basin Compact, which will soon go before the Congress and the legislatures of Virginia and other interested Basin States, is a hopeful tool to bring about coordinated protection of the Potomac. One of the most useful things your study could do would be to devise and propose a series of approaches, mechanisms and inducements by which the preservation of estuarine zones can be accomplished on an area and region-wide basis.

Specific problems encountered which threaten estuarine zones of the Potomac include the following:

Landfill of marshland at the mouth of Hunting Creek. Hunting Creek is a tributary of the Potomac near Alexandria, Va., and the marsh area involved - which the developer seeks to fill and develop for apartment houses - is a major wintering ground for water fowl. The project is scenically objectionable as well as destructive of a valuable estuarine resource. State legislation granting authority to transfer the State's interest in this marshland to the developers is being challenged in the courts; in addition, the legislation may well be reconsidered by the next General Assembly. Everything possible should be done to prevent this misuse of a valuable estuarine asset.

Establishment of oil refinery at Piney Point, Md. The leakage and spillage of oil that would undoubtedly occur if the Steuart Petroleum Company's plan for an oil refinery at Piney Point is approved would be disastrous to Potomac estuarine resources. The proposed facility should not be built.

In addition to the foregoing, I call your attention to the serious threat which may be posed to estuarine aquatic life by the construction of huge power plants in or near estuaries. Whether fueled by nuclear elements or other fuels, large quantities of heated water are generated by operation of such power plants. Unless the utility owners are required to cool such waters to an appropriate temperature before discharge into the neighboring water source, destruction of nearby estuarine aquatic life during some portions of the year is inevitable. Utilities should be required to develop and apply cooling procedures and facilities, so as to cool adequately the water they use before its return to public waters. I hope that you will recommend controls of universal application that will remove the threat of thermal pollution of our estuaries by power plants.

I appreciate the opportunity to make these comments.

Please include this statement in the record of your proceedings.

Respectfully submitted,

Clive L. DuVal, 2d

COMMONWEALTH OF VIRGINIA

DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

DIVISION OF WATER RESOURCES
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J. M. ALEXANDER, P.E., COMMISSIONER

Marvin M. Sutherland
Director

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Executive Assistant

DIVISIONS
Forestry
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Parks
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FWPCA

November 20, 1968

Mr. Eugene T. Jensen
Regional Director
Middle Atlantic Region
Federal Water Pollution
Control Administration
U. S. Department of the Interior
918 Emmet Street
Charlottesville, Virginia 22901

Dear Mr. Jensen:

Reference is made to your letter of October 18, 1968 relative to the comprehensive study of the Nation's estuarine areas being made under the direction of the Secretary of the Interior in accordance with the provisions of the Clean Water Restoration Act of 1966. The following is provided for the record and is in response to comments appearing in the second and third paragraphs of your letter of October 18, 1968.

As you know the uses of tidal estuaries are many and varied. Such uses include, but are not limited to, the following: A source of food to include both finfish and shellfish; recreational uses to include boating, swimming, water skiing, and other related recreational uses; navigation in the interest of national security, navigation for commercial purposes, and recreational navigation; habitat and refuge for wildlife; potential water supply; and use of estuaries as the ultimate recipient of waters drained from fast lands to include waste waters.

To arrive at a monetary value of the Virginia estuaries would be difficult if not impossible due to the fact that benefits which are derived from the estuaries are both tangible and intangible. That fact notwithstanding, the value of Virginia's estuaries to the economy of Virginia is significant.

Without careful management of the estuaries, certain uses will undoubtedly result in the diminution of the value of these estuaries for other uses. A striking example of such is that the increase in discharge of waste waters to estuaries will in all probability result in the decreased value of the estuaries as a source of food supply. Also, the introduction of waste waters would tend to diminish the value of the estuarine waters for recreational purposes. Generally speaking it might be said that many of man's activities will in all probability challenge the ecological balance of estuarine waters.

In the formulation of plans and programs to deal with the development and management of the water resources of the Commonwealth under the provisions of state legislation, it would appear that such a plan should include due consideration of estuarine waters. Too, it would appear that plans and programs for management of the water resources in a river basin should consider the estuarine portion of the river basin and the freshwater portion of the basin as a complete system rather than considering the estuary as an entity separate from the freshwater portion of the basin.

We are appreciative for the opportunity to comment.

Sincerely yours,

J. M. Alexander

J. M. Alexander, P.E.
Commissioner

JMA/bb

City of Norfolk

Virginia 23501

October 29, 1968

Mr. Eugene T. Jensen
Regional Director
United States Department of the Interior
Federal Water Pollution Control Administration
Middle Atlantic Region
918 Emmet Street
Charlottesville, Virginia 22901

Dear Mr. Jensen:

In reply to your letter of October 18, 1968, this is to advise that Mr. Arthur Freeman, of the Department of the Public Works, will attend the meeting pertaining to the Clean Water Restoration Act at the Chamberlin Hotel on November 19, 1968. I have asked him to submit the attached statement, which refers to the position of the City of Norfolk, into the record.

Sincerely yours,

Thomas F. Maxwell
City Manager

STATEMENT BY: CITY OF NORFOLK, VIRGINIA

The City of Norfolk is interested in pollution abatement in the Hampton Roads area by any or all of the following.

1) All sewage treatment plants in the area, privately owned, municipally owned, Government owned and State owned, should be of the secondary type.

2) Ways and means should be provided to remove pollution from the James River which, after receiving effluent from both municipal and industrial areas in the Richmond-Hopewell section, discharge the effluent into the Hampton Roads area.

3) More assurances that oil and coal pollution in the harbor area are adequately controlled.

4) Means should be provided for the sewage disposal of all ships, both commercial and Government, as well as pleasure craft.

The above steps are necessary for the most beneficial development of the harbor area from a public health point of view, as well as a recreational point of view.

CITY OF NORFOLK, VIRGINIA

CITY OF FREDERICKSBURG
VIRGINIA

JOSIAH P. ROWE, III
MAYOR

RECEIVED
NOV 19 1968
OFFICE SERVICES SECTION
FWPCA

November 18, 1968

Mr. Eugene Jensen
Federal Water Pollution Control Administration
United States Department of the Interior
918 Emmet Street
Charlottesville, Virginia 22901

Dear Mr. Jensen:

The City of Fredericksburg has considerable interest in the proposed November 19 meeting at Fort Monroe, Virginia, preceding the preparation of a report under the Clean Water Restoration Act of 1966 on estuarine zones and influences.

Due to other commitments, we are unable to send a representative to the meeting but wish to express our interest since the City of Fredericksburg lies at the upper end of the estuarine zone of the Rappahannock River.

Records of William Byrd indicate that sailing schooners docked at the Fredericksburg wharf approximately the time of 1732 A.D.

The City lies just below the fall line and has a particular interest in anything effecting estuarine development. Over a period of many years, studies have been made of the Rappahannock River by the Corps of Engineers which have resulted in their latest report prepared in May of 1966 recommending the construction of the Salem Church Reservoir just above the City of Fredericksburg.

A great economic advantage of the Salem Church Reservoir will be the provision of low flow augmentation anticipated to be of considerable benefit to shell fish and other fish downstream toward the mouth of the Rappahannock River.

It is noted that one of the assumptions in your frame of reference for your studies is "estuaries cannot be considered independently of their watersheds or the continental shelf".

We hope that your study will make reference to the benefit of low flow augmentation to estuarine zones which will occur from the construction of up-river dams and reservoirs such as the proposed Salem Church Dam, which was approved in the Omnibus Public Works Bill of Congress during the 1968 Session.

Again let me assure you of our interest in the preservation and restoration of estuarine resources. We look forward to receiving copies of reports which will result from your public hearings throughout the United States.

Very truly yours,

Josiah P. Rowe, III

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COMMONWEALTH OF VIRGINIA
HOUSE OF DELEGATES
RICHMOND

GEORGE C. RAWLINGS, JR.
SPOTSYLVANIA, STAFFORD AND
FREDERICKSBURG
LAW BLDG.
FREDERICKSBURG, VA

COMMITTEE ASSIGNMENTS
CLAIMS
PUBLIC INSTITUTIONS
ENROLLED BILLS
WELFARE

November 18, 1968

Mr. Eugene T. Jensen
Regional Director, Middle Atlantic Region
Federal Water Pollution Control Administration
United States Department of the Interior
913 Emmet Street
Charlottesville, Virginia 22901

Dear Sir:

Thank you for the opportunity to present recommendations for the preservation, study, use, and development of the Nation's estuarine resources. It is impossible for me to appear in person before your group, and I would appreciate your reading this letter and filing the same in the records.

Not being an expert in this field, I can only call your attention to matters which have come to my particular interest as a state legislator representing the Fredericksburg, Spotsylvania and Stafford area in Virginia. Stafford County has a particular association with estuarine problems since its northeastern boundary is the Potomac River, which has a number of creeks and coves that are a part of Stafford's geography. Spotsylvania and Stafford Counties have the same association with creeks and shores of the Rappahannock River. This situation has given rise to an active sport and commerical fishing business and in more recent years to increasing recreational activities.

Commercial fishermen have for years earned their livelihood from the Potomac and Rappahannock and their creeks which border Stafford and Spotsylvania Counties and other similarly situated Virginia areas. They are a welcome fixture and should be encouraged and helped in every way possible. At the same time, there is a growing activity of boating and related water sports. There are laws and regulations which seek to curtail the use of these waters by fishermen and sporting enthusiasts, but like any other regulations they cannot always be satisfactorily enforced to accomplish the ends sought. One ov the most vexing problems is the placing and removal of stakes used to hold fishing nets. It is impossible to get all of these stakes removed by those who place them, and they are a definite danger to boating and water skiing enthusiasts. It is my opinion that some practical program should be evolved either by state, federal and local governments acting together or separately to remove these stakes periodically. It is not enough to say that law enforcement officials should prevent the abandonment of these stakes by fishermen. Naturally, they should try to reduce to a minimum the number of stakes left after the fishing nets have been removed. However, it is impossible to keep everyone from leaving stakes and obstructions. For this reason, we must face the fact that someone must remove those stakes which are abandoned. The State of Virginia is the primary authority which is best set up tohandle this task, and the Division of Game and Inland Fisheries or the Fisheries Commision could accomplish it with the proper financial support and impetus. If the State is not going to accept this responsibility, then the United States Interior Department or the Corps of Army Engineers should accept it. I hope that by calling attention to this situation that some such action can be taken.

There is one other particular problem for the prompt solution of which I appeal to you. Many years ago there was a railroad depot on Aquia Creek in Stafford with pilings set out into the Creek. When this depot was abandoned, the pilings were left and now remain just off shore at a critical spot near a point of land near the mouth of the Creek where many boaters pass on entering the Creek. At certain times the pilings can be seen and at other times they are just below the surface. They represent an extreme and increasing danger to small craft navigation. In fact, a number of boats have been damaged upon these pilings and although, as yet, no lives have been lost, we have been extremely fortunate. At my request the Explosive Ordinance Personnel at Quantico investigated the possibilities for their removing these pilings but they were not equipped to do so. They referred me to the Underwater Demolition Teams of the Amphibian Force of the U. S. Atlantic Fleet, but because of scheduled commitments they were unable to help. As a specific project that might result from this hearing, I urge you to give attention to this problem. I might add that the Virginia Game and Inland Fisheries Commission turned down my request for help on this problem some time ago.

Of course there are many other problems which experts will no doubt point out to you. However, I have only attempted to focus the spotlight on two places where action is needed and which are of special interest to me as a member of the General Assembly from this area.

Mr. Eugene T. Jensen
November 18, 1968
Page Three

Please understand that the dreadful pollution of the Potomac and the pressing need for correcting it are of great importance and demand our attention, but I am sure you will receive many suggestions on this matter. Needless to say, I support every effort to clear up the pollution of this river, and my attention to two other smaller problems does not in any way mean that I do not have great interest in the solution of this greater problem and other important needs of coastal Virginia.

Your attention to my suggestions would be appreciated.

Sincerely yours,

George C. Rawlings

George C. Rawlings, Jr.

APPENDIX

APPENDIX A

LIST OF REGISTRANTS

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November 19, 1969

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